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Cromwell Pool Is Seminole County's Latest Important Field

By A. F. Hinton

STAFF REPRESENTATIVE

TULSA, March 22.

WITH nine producing wells and two gas wells, and with a proven area more than a mile in length, the Cromwell pool, Seminole county, is one of the currently interesting developments which have come about since the discovery of the Wewoka field opened up all that part of the state for drilling.

It is of course, too early in the field's history to be able to say anything definite as to its ultimate importance or final areal limitations. It can be said, however, that at present the field is a mile and a quarter long north and south, and slightly over a quarter-mile wide east and west, taking in only producing oil wells. If two gas wells on the west side of the field be included, a half-mile of east and west length would be added.

Drilling in the Cromwell area antedates the first well at Wewoka by several months, although the oil production was not obtained until after the Wewoka field was in. The first two wells in the field were gas wells, both drilled by Cosden Oil & Gas Co. The first of these, located in SEc NW¼ of 15-10-8, came in Dec. 5, 1922, making 25 million feet of gas with about 800 pounds rock pressure, in sand from 3455 to 3465 feet. The second Cosden gas well is in the SEc SW¼ NE¼ of 15, a quarter-mile east of the discovery, and came in Aug. 1, 1923, with initial production of 12 million cubic feet.

The first gas well is located on a well-defined surface nose, but is 80 feet lower structurally than the other gas well to the east. Subsequent developments have served to shape up this nose into the west half of an anticline, with the east side indefinite as to contour. It is believed that there is a fault running northwest and southeast through the NE¼ of section 15, but not enough data have been assempled to say definitely as to this.

The first oil well completed in the field was the Cromwell Oil & Gas Co. No. 1, in the NWc NE¼ SW¼ of 15. This well came in Nov. 28, 1923, flowing 350 barrels of 41-gravity oil in sand from 3467 to 3489 feet. This is about a quarter-mile west and a location south of the first Cosden gas well. The sand found in this well, which is the producing formation of all wells so far drilled in the field, has not been definitely identified, but it seems certain that it is of the so-called Dutcher series. It may be the Deaner or the Lyons sand of this series, the preponderance of opinion among geologists leaning toward the former.

The well which extended the field a mile to the southeast was the Jarvis & Holm and Darby Petroleum Co. No. 1, in the NEc SE¼ of 21-10-8, which had initial production of about 50 barrels in sand from 3484 to 3496 feet. This well would have been in before the Cromwell well which is actually the discovery well of the field, as it had been shut down with a hole full of oil for some time during the period of proration and general depression last summer. It was finally completed Jan. 3, 1924, or a little more than a month after the Cromwell well was drilled in.

An east offset to this well was drilled in Feb. 12, by Jarvis & Holm and Savoy Oil Co., in the NWc SW¼ of 22. This well was drilled nine feet in the sand and had initial production of 400 barrels. Between the original Cosden gas well and these wells a mile south and a half-mile west there is a dip to the south of 90 feet. Although there is apparently little difference in the sand depths of these wells and the Cosden gas well, the difference in surface elevation is 81 feet, the Cosden well being on the high point.

In Sec. 10-10-8, about a mile and a quarter north and east of the Cromwell discovery well, Shaffer Oil & Refining Co. recently drilled in a 30-million foot gas well in sand from 2718 to 2724 feet. While this is not the Cromwell sand, it has been correlated with sands found in wells in the Cromwell field proper, and indicates a dip to the north of about 100 feet in this distance. The gas well referred to is known as No. 1 Little, and is located in the SWc NW¼ NE¼ of the section.

Following the bringing in of the Cromwell discovery, a drilling campaign in the vicinity started at once, and has been going on steadily ever since, until at the present time there are 27 operations under way in township 10-8 in addition to the wells which have been completed. Several wells have been drilled in within the past week or ten days, and have proved to be the largest producers yet found in the field. The pool is now producing better than 5100 barrels daily from eight wells. Last week, with six wells, and not including two good wells brought in since, it averaged 4070 barrels daily.

Hoffer Gets Best

The best well yet brought in in the field was the T. B. Hoffer et al No. 1 Stidham, in the NEc SE¼ NE¼ of 16, which extended the field a quarter-mile west and about the same distance north. This well got the sand at 3494 feet and made 2085 barrels the first 24 hours after having been drilled to 3502 feet. It is reported that this well is 40 feet lower on the structure than the Cosden gas already referred to as a "marker" in the field.

Another good well recently brought in was the Gypsy Oil Co. No. 1 Stidham, in the NEc NW¼ SW¼ of 15, a west offset to the Cromwell discovery well. The Gypsy well got the sand from 3485 to 3573 feet, and came in with initial production of 55 barrels an hour. It is now making 1060 barrels daily. Oil from this well, and also that from the Hoffer well already mentioned, is of 41 gravity, or about the same as other wells in the field.

Tidal Oil Co. and McMan Oil & Gas Co. recently drilled in offsets to the Jarvis & Holmes wells in the southern part of the field, making four producing wells

around the quarter-corner between Sec. 21 and 22. The Tidal well, located in the SEc NE¼ of 21, made 720 barrels the first 24 hours at two feet in sand topped at 3475 feet according to incomplete data now available. The well has not been completed at this writing, and probably has been drilled in farther than the distance given above. It got a good sand with no oil from 3462 to 3465, and had sand with a smell of oil from 3465 to 3475.

The McMan well is a direct east offset to the Tidal and is in the SWc NW¼ of 22, on the King farm. This well got the sand at 3449 feet, according to reports, and at 3453 feet was flowing 38 barrels an hour. It had not been completed when this report was received.

H. F. Wilcox Oil & Gas Co. got only a comparatively small well in its No. 1 Bruner, located in the NWc SE¼ SW¼ of 15-10-8, although this well also has not been completed. At last reports it was making about 50 barrels of oil and 7 million feet of gas in sand from 3474 to 3488 feet. Cosden Oil & Gas Co. No. 2 Willis, SWc SE¼ NW¼ of 15, is showing for about 200 barrels at one foot in sand topped at 3463 feet. This well is a north offset to the Cromwell No. 1, and is on the same lease with the original Cosden gas well, a quarter mile east.

Most Active Companies

Companies having acreage and now drilling wells in the Cromwell pool include Cromwell Oil & Gas Co., Mid-Kansas Oil & Gas Co., Gypsy Oil Co., Snowden & McSweeney, Waite Phillips Co., Roxana Petroleum Corp., Cosden Oil & Gas Co., T. B. Hoffer et al., Amerada Petroleum Corp., H. F. Wilcox Oil & Gas Co., Shaffer Oil & Refining Co., McMan Oil & Gas Co., Darby Petroleum Co., Savoy Oil Co., and Jarvis & Holm. The land is subdivided in such a manner in the immediate vicinity of the field that conservative lease development is possible, the land being in comparatively large parcels, all 40 and 80-acre tracts. At Wewoka, irregular subdivisions and numerous 10-acre tracts led to the drilling of an unnecessarily large number of wells, entailing undue hardship on operators having acreage scattered through the field.

Locations, rigs, and drilling wells in township 10-8 are as follows:

Section 15

Mid-Kansas No. 1 Alexander c SW NW NW, rig on ground.

Gypsy Oil Co. No. 2 Bruner, SEc NW NW, rigging up.

Gypsy Oil Co. No. 3 Stidham SEc SW NW, building rig.

Gypsy Oil Co. No. 4 Bruner c NW NW SW, building rig.

Gypsy Oil Co. No. 5 Stidham c SW SW NW, building rig.

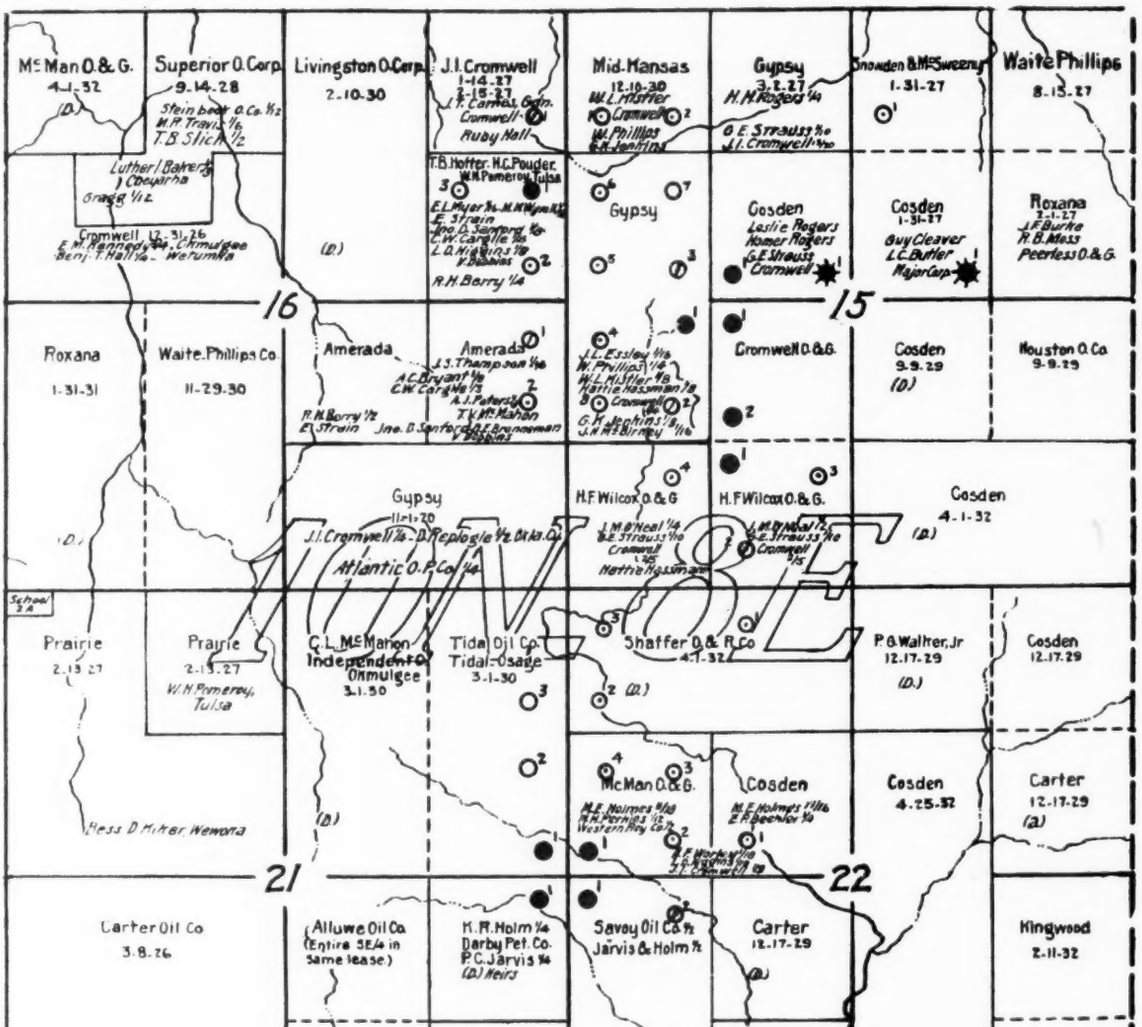
Gypsy Oil Co. No. 6 Stidham c NW SW NW building rig.

Gypsy Oil Co. No. 7 Stidham c NE SW NW, building rig.

Snowden & McSweeney No. 1 Tiger c SW NW NE, building rig.

Wilcox O. & G. Co. No. 2 Bruner c SW SE SW, rigging up.

(Continued on page 20)



"Map Correct As Of March 20, 1924. Courtesy of Mid-Continent Map Co., Tulsa, Okla."

THIS WEEK'S OIL NEWS SUMMARIZED

Production

(Production News pp 51-64)

THE past week was marked by a decline in production for the country as a whole and by one advance and one decrease in crude oil prices. Gulf Coastal crudes were advanced 15 and 10 cents, according to grade, and Smackover crudes were reduced 15 and 10 cents by one company.

In the case of the reduction it is believed that it represents only The Texas Co.'s views as to the worth of the Smackover oil in comparison with other oils and is not an indication of a change of opinion as to what the immediate future of the industry is. On the latter score, the prices paid at the latest Osage sale point to the optimistic sentiment of the large companies.

Production as a whole decreased the past week. A large number of completions in the Burbank field increased the daily average production of that field by more than 4500 barrels. The figures by principal districts for the past two weeks were as follows:

	March 22	March 15
Oklahoma	392,550	388,495
Kansas	72,325	71,450
Wyoming-Montana	130,165	126,630
Louisiana-Arkansas	167,497	171,452
California	641,900	641,800
Texas and Coastal Louisiana	391,255	403,205
Eastern	97,000	98,000
Total	1,892,692	1,901,032

Marketing

(Marketing News pp 105-118)

EXPORT trade continues to provide the stimulus to keep refinery gasoline markets alive in the southwest. Domestic buying is almost negligible and many jobbers are asking refiners to withhold for a few weeks shipments scheduled in their contracts because they have no unfilled tankage space. Pennsylvania gasoline markets are dull and soft.

During the last month export buyers have placed orders in Kansas, Oklahoma and Texas for 3,350 cars of gasoline, or approximately 33,000,000 gallons. These orders, exceeding 100 carloads a day, have taken off the market what might otherwise have been distress motor fuel and have saved many plants from operating at serious losses.

Spring gasoline demand is now regarded as a couple of weeks distant because snows and rains have made road conditions bad over most of the country. It is doubtful whether increased motoring will be reflected in the refinery gasoline markets for a month because jobbers' tanks are filled and the jobbing trade will have to work off its stocks before it will become an active buyer again.

Weather has also weakened the kerosene market. It has been impossible for plowing and as long as tractors are laid up there will be no heavy buying of kerosene. While cold weather has sustained the demand for distillates as fuel, prices have sagged with kerosene but to a less degree.

Only the railroads are engaged in fuel oil buying. This demand is steady when compared with industrial demand but the railroads have been unable to prevent an accumulation of fuel oil at refineries.

Demand for cylinder stocks has been strong and prices are higher in both Pennsylvania and the Mid-Continent. South Texas unfiltered pale and red oils have been advanced in line with higher crude oil costs. Oklahoma and Pennsylvania neutrals have been steady in demand and price. Paraffin wax is active and scarce and prices are higher.

Crude Price Changes

March 20—Humble Oil & Refining Co. advanced Gulf Coastal crudes 15 cents a barrel on Grade "A" and 10 cents on Grade "B". Other purchasers made similar advances. Companies which buy in fields not on graded basis made the advance 15 cents.

March 24—The Texas Co. reduced Smackover, Ark., prices as follows: Below 24 Be., reduced 15 cents to 85 cents; 24-24.9, reduced 10 cents to $1.00; 25-25.9 reduced 10 cents to $1.10; 26 and above, $1.25.

Coming Meetings

Association of American Petroleum Geologists, Rice Hotel, Houston, Tex., March 27, 28, 29.

American Association of Oil Burner Manufacturers, Chase Hotel, St. Louis, April 1, 2, 3.

National Petroleum Marketers Assoc., Statler Hotel, St. Louis, April 7, 8, 9, 10.

Association of Natural Gasoline Manufacturers, Tulsa, April 23, 24, 25.

Minnesota Petroleum Assoc., West Hotel, Minneapolis, April 23, 24.

National Petroleum Assoc., at Cambridge Springs, Pa., in April, date to be set.

Pierce Reorganization Plan Being Drafted

NEW YORK, March 24.—Plans are being completed for the reorganization of the Pierce Oil Corp., according to reports in the financial district. These plans provide for the formation of a new company and the raising of $9,000,000 new capital.

It is the intention to leave outstanding all of the present Pierce stock and the sole assets of the present company will be stock in the company. The Pierce property will be exchanged for approximately 1,100,000 or 1,200,000 shares of the new company and around 1,300,000 shares of new company stock will be offered at between $6 and $8 a share. This

Of the new capital it is the intention to spend part on improvement of Pierce refineries by the installation of cracking stills and to set aside between $2,000,000 and $3.000,000 for working capital.

Deeper Pay at Luling

HOUSTON, March 25—United North & South Oil Co.'s No. 3 Gideon, in the Luling field, is flowing by heads in uncompleted state at 2528 feet, or approximately 400 feet deeper than the pay hitherto developed in the Edwards limestone. This well is southeast of the Hardeman tract and in proximity to a cross fault believed now to exist. Incomplete information suggests that the well is producing from the Edwards limestone.

Financial

(Financial News pp 116-118)

WEAKNESS was evident among the oil stocks last week reflecting the dullness in the gasoline markets. Some strength was shown on Saturday by several Independent stocks on rumors of further advances in prices of Mid-Continent crude oils. Those affected by these rumors included Marland, Cosden, Phillips and Simms, Houston and shares of companies operating on the Pacific coast shared in the strength with the Mid-Continent companies.

Excepting a few of the pipe line stocks the Standard Oil list was weak and rather heavy losses were suffered by most of the group marketed on the New York Curb.

Several listed and Standard issues touched new lows for the year. The reduction of the Pan-American dividend rate seemed to have been discounted as neither the common nor the B stock declined much. At the new rate of $1 a quarter for these stocks, the yield is better than 8 per cent.

Trade Gets Another Stiff Rebuke From Supreme Court

By Special Correspondent

WASHINGTON, March 22

A REBUKE that probably would be deemed crushing by a sensitive organization has been administered to the Federal Trade Commission and to congress, by the Supreme Court of the United States

It is, of course, not the first one that has been laid on the shoulders of either.

In cases brought by the trade body against the American Tobacco Co. and P. Lorillard to compel them to turn over to the commission all their books and papers to the end that the commission might go over them to find evidences of violations of the anti-trust laws in the form of price maintenance agreements, the court held, in effect, that the trade commission has no authority to go on "fishing expeditions" but must confine its subpoenas for the production of books and papers it is able to describe with reasonable accuracy and with reason to believe that the papers so described contain such and such facts or evidence of facts.

The opinion of the court, written by Justice Holmes, son of Oliver Wendell Holmes, and read by him, was delivered with an amount of sarcasm and show of feeling that only those who heard him could imagine. That he was indignant over the callous disregard of fundamental principles of Anglo-Saxon jurisprudence, was obvious. Yet his language was temperate in terms but objurgatory in substance.

"It is contrary to the first principles of justice to allow a search through all of the companies' records," declared the venerable justice who was speaking for the other eight members of the court, and not merely for himself.

The cases grew out of an investigation instituted by the Federal Trade Commission, in compliance with a resolution adopted by the senate Aug. 9, 1921, directing the commission to investigate the tobacco situation "as to domestic and foreign trade, with particular reference as to market prices to producers, for tobacco, and the market price for manufactured tobacco and the price of leaf tobacco exported, and report to the senate as soon as possible the result of such investigation."

In compliance with that resolution, without accusing the tobacco companies of anything, the trade commission called on the two companies in question to produce all their accounts, books, records, documents, contracts, papers, memoranda, and correspondence, immediately for the inspection and examination of agents of the commission, for the purpose of making copies of them. In addition, the American Tobacco Co. was commanded to produce, when the commission's agents might request them, all letters and telegrams received by the company from, or sent by it, to all jobber customers, between Jan. 1, and Dec. 31, 1921.

Justice Holmes said the senate resolution might be laid aside as of no consequence because it did not purport to allege any violation of any of the anti-trust acts, and especially the catch-all section 5, forbidding unfair methods of competition.

He said the commission had made the formal averment that complaints had been filed with the commission alleging unfair methods of competition by the enforcement of reselling prices but had refused any definite information as to the complaints to the tobacco companies. He said that that averment might also be laid aside because the commission claimed unlimited right to access to the papers of the tobacco companies with reference to the possible violation of the unfair methods of competition section.

The court pointed out that, in equity, only those documents or papers could be called for that were mentioned in the answers of the respondents. In this line of cases, the court said, the rule was probably more liberal but that it did not extend to the unlimited fishing which the trade commission had undertaken when it demanded every scratch of paper in the possession of the companies, relevant or irrelevant.

This decision is taken by those who have been following the cases brought by the trade commission against the iron and steel and coal industries as indicating that the injunctions granted by the lower courts at the request of steel and coal companies ordered to make reports and submit books and papers, will be affirmed. There are hundreds of law-makers whose records are such as to lead to the conclusion that they would do anything to catch six votes from among the so-called radicals, believing that no matter what they would do they would continue to receive support from fairly strict party men, and that, therefore, they could afford to flirt with the so-called radicals, holding the balance of power.

Starts Waterway Development

NEW YORK, March 24.—Standard Oil Co. of New York is proceeding with terminals at Sackett's Harbor and Oswego, N. Y., in connection with a $2,000,000 development to distribute gasoline and oil by means of the New York barge canal and adjacent waterways. Oswego is at the Lake Ontario terminus of a branch of the barge canal and Sackett's Harbor lies on the eastern shore of Lake Ontario and is easily reached by barges from New York or Buffalo.

Atlantic Buys Land

HOUSTON, March 21.—Atlantic Oil Producing Co. has purchased an additional 200 acres of ground adjoining its loading terminal and tank farm at Atreco, on the Neches river, near Port Arthur. Reports that eventually the Atlantic may build a Texas refining plant are without confirmation.

Cromwell Pool

(Continued from page 18)

Wilcox O. & G. Co. No. 3 Bruner c NE SW SW, rig on ground.

Wilcox O. & G. Co. No. 4 Bruner c NE SW NE, rig on ground.

Cromwell O. & G. Co. No. 2 Bruner SWc NE SW, drilling 2020 feet.

Section 16

Livingston Oil Co. No. 1 Proctor c NE SW NE, rig on ground.

Cromwell O. & G. Co. No. 1 Roberts c SE NE NE, rigging up.

Amerada Pet. Corp. No. 2 Bruner c NEc NE SE, Drilling 1670 feet.

Amerada Pet Corp. No. 2 Bruner c SE NE SE, rig on ground.

T. B. Hoffer et al. No. 2 Stidham, c SE SE NE, rig on ground.

T. B. Hoffer et al. No. 3 Stidham, c NW SE NE, rig on ground.

T. B. Hoffer et al. No. 4 Stidham c SW SE NE, rig on ground.

Section 21

Tidal Oil Co. No. 3 Harjo SE c NE NE, location.

Tidal Oil Co. No. 3 Harjo SEc NE NE, location.

Section 22

Cosden O. & G. Co. No. 1 King SWc SE NW, rig on ground.

Holm & Jarvis No. 2 Harjo NEc NW SW, drilling 650.

McMan O. & G. Co. No. 2 King SEc SW NW, rig on ground.

McMan O. & G. Co. No. 3 King c NW SW NW, rig on ground.

McMan O. & G. Co. No. 4 King c NE SW NW, rig on ground.

Shaffer O. & R. Co. No. 1 Yarhola c NW NE NW, building rig.

Shaffer O. & R. Co. No. 2 Yarhola c SW NW NW, rig on ground.

When the Cromwell well came in, Sinclair Crude Oil Purchasing Co. laid a line to it, en route to Wewoka, and has since been running its oil, as well as other production in the field. The Prairie Pipe Line also has a line into the field. Magnolia Petroleum Co. is now reported to have laid a line to the field, and is taking the oil from the McMan Oil & Gas Co. well. The latest pipe line entry into the field is the Gulf Pipe Line Co., which is now coming in with a line from Okemah.

Tell Motorist To Keep Engine Clean, Ethyl Gas Only Dopes It

By Paul Truesdell

STAFF REPRESENTATIVE

CLEVELAND, March 24

MANY jobbers over the country are worrying considerably over how to meet the competition of companies selling or about to begin selling Ethyl gas, the General Motors anti-knock fuel, under exclusive franchises in their territory. With most of these the worry is a matter of the future rather than of the present because manufacturing and distributing facilities of General Motors Chemical Co. have been unequal to the problem of supplying the fluid in sufficient quantities to permit its sale in all the territory which is covered by exclusive contracts for its distribution.

It is a problem that pretty nearly all the jobbers in the country will have to face very shortly, however, for the contracts already signed cover the sale of Ethyl gas in all but 11 of the 48 states and these 11 states, mostly on the Pacific coast and in the Rocky Mountain region, probably will never find Ethyl gas necessary because gasoline made from the aromatic and napthene base California crudes is a natural anti-knock fuel.

The companies now having exclusive contracts for the distribution of Ethyl gas in their territories are: Refiners Oil Co., Dayton, O.; Standard Oil Co. of Indiana; Standard of New Jersey; Spears & Riddle, Wheeling, W. Va.; Gulf Refining Co. and Sun Oil Co.

The understanding is that all of these exclusive contracts run for 18 months, after which the anti-knock material will be open to any oil company. Inasmuch as the spread of demand for the stuff is almost certain to be rather slow, it would seem that it will not be difficult for the established jobber to protect himself against the competition for a year and a half at least without losing any noticeable part of his business.

How to Meet It

It seems that the best way to do this is:

1. Convince the driver of a low-compression car that he does not need it, which he doesen't, and that if he wants to buy a premium motor fuel he will get more benefit by spending his extra 3 cents a gallon for a high gravity gasoline than by spending it for Ethyl gas.

2. Convince the driver of a high compression car that knocks even when very slightly carbonized, that he can get rid of the knock in another way than by using Ethyl gas and at considerably less cost than the premium he would pay on Ethyl gas in a year's fuel bill. Which he can.

Ethyl gas everywhere costs 3 cents above the tank wagon price. When the automobile owner pays a premium price for his fuel he must do so because he feels he gets value for the extra money. With a certain type of car that knocks easily, undoubtedly he gets the value for his extra investment but it is up to the jobber selling ordinary gasoline to show that motorist how he can accomplish the same result cheaper and without taking his business away from the oil company he has been patronizing.

Do Not Knock It

Do not knock Ethyl gas. It helps nobody to knock a competitors product and do not take on the sale of a fake tonic. Appeal to the motorist's reason something like this:

The cars at present on the road were designed to operate satisfactorily on the ordinary, present-day gasoline. The compression ratio varies considerably with different cars and different types of engines.

The higher the compression of the engine, the more easily it will knock as carbon accumulates, partly because the accumulation reduces the size of the combustion chamber and thus increases the compression ratio beyond what the ordinary gasoline will stand without knocking, and partly because the carbon deposit, becoming incandescent, increases the heat in the combustion chamber, which tends to induce knocking.

Don't forget and don't let your customer forget, that you are selling a motor fuel of the present for cars of the present day while Ethyl gas is primarily a product for cars of the future.

Keep Out the Carbon

The real answer to the knocking problem is to keep the car free from carbon. Then it will not knock because, as before stated, compression ratios on present-day cars were figured to permit them to run without knocking on present day gasoline when they are clean. Carbon is the greatest enemy of efficient motor operation.

The average consumption per automobile per year is usually figured at 500 gallons. At this rate the average driver using Ethyl gas would pay a premium of $15 a year for ethylizing his fuel. If he drives a six-cylinder car, $15 would pay for burning out the carbon five times in a year, which is more than sufficient to keep almost any car clean. If he drives a four-cylinder car five carbon removals would cost only $10.

Ethyl gas does not prevent the formation of carbon. It merely permits the driver to go on running his car lulled to a false sense of security because the engine makes no complaint, while the carbon goes on forming and raising the devil unhindered.

Removal of the carbon is the real answer. Using Ethyl gas is about the same thing as for a man who has a persistent and lingering headache to dope it along day after day with some drug instead of finding and removing the cause of the headache. Silencing the warnings of nature will not permit you to get away from the consequences of your foolishness whether in the case of doping a headache or doping a motor.

One enthusiastic booster for Ethyl gas told his experience which well illustrates this point. He bought a new Cadillac car and ran it for the first 2500 miles on regular gasoline. Then he began using Ethyl gas and drove it for 11,000 miles more.

"I never had the valves touched nor the carbon cleaned out and it ran perfectly," he said.

What He Found Out

But—when he did finally take it to a garage with the hankering suspicion in his mind that it ought to be looked over, he found that carbon had accumulated under his exhaust valves until they didn't seat and they were practically burned up. They all had to be replaced. Now Ethyl gas hadn't done this damage. It is safe to take the word of the General Motors chemists that the stuff will not injure any part of the motor. But it had simply lulled the man into believing that the engine was all right and didn't need attention—helped him to quiet his conscience and let it go, which is what it amounts to.

That the real way to get efficiency is to keep out the carbon and not merely to slug the engine into quietness with dope, is recognized by C. F. Kettering, of the General Motors Research Corp. better than by anybody else. This is proved by the fact that he and Thomas Midgley Jr., head of the fuel section of the research corporation, have just spent a lot of time in developing a carbon remover, which they expect shortly to put on the market. The Yellow Cab Co. of Chicago has been using the carbon remover for some time, according to Mr. Kettering, with very good results, finding the cost about one-third the cost of burning out the carbon and more effective.

As for the car that does not knock, as Mr. Kettering himself says, the driver can spend his 3 cents premium to better advantage, especially in cold weather, buying a high test gasoline that will give him a quicker starting motor, than by investing it in Ethyl gas. If the car does knock,

Clean out the carbon.

Shipping Board And I. C. C. Action Menaces Independent Exporter

By Special Correspondent

WASHINGTON, March 22

AMERICAN industries having export trade, including the petroleum industry, have been set by the ears by acts of the United States Shipping Board and the Interstate Commerce Commission, decreeing that section 28 of the Jones merchant marine law, enacted in 1920 shall become operative May 20.

Unless congress repeals that section of the law, or the operative date thereof is postponed for an indefinite period, the oil importing and exporting busine s of the country will be seriously disarranged, if not ruinously handicapped.

The section in question denies to traffic brought into or to be taken out of the country in foreign ships, the benefit of the import and export rates, which are lower than the rates on which goods are carried to the ports, except in a few instances. New York is one of the exceptions. The prohibition is to apply to all traffic, except grain. Great Britain and Japan have already taken steps to mitigate if they cannot remove the hardships that will be placed upon their merchant marines.

Similar action in behalf of the petroleum industry has been taken by the American Petroleum Institute. Arrangements for a hearing in behalf of the oil interests, for 2 p.m. March 25 before the Shipping Board were made by Fayette B. Dow, Washington representative of the Institute and the Western Petroleum Refiners Association on March 18.

Mid-Continent refiners figure that nearly 90 per cent of their exports had been moving in foreign ships. W. H. Reed, representing the overseas interests of the Sinclair companies accompanied Mr. Dow to the shipping board.

Independents Handicapped

The effect of the acts of the two regulating bodies would be to place the Mid-Continent and all other refiners not having enough ships, under the American flag, to carry their products would be placed at a disadvantage of from 2 to 10 cents per 100 pounds, in freight rates on American railroads, to the ports of departure of the traffic. In addition they were face to face with threats of retaliation by foreign governments, intimations of which, by that time, had come from London, Tokio and Paris.

The Millers National Federation has already filed a protest with the Interstate Commerce Commission and the Shipping Board alleging there are not enough American ships to give the prompt and frequent service American exporters of American flour require- Other organizations are preparing to make similar allegations.

Utmost secrecy seems to have prevailed at the shipping board about the act of that body. The law says that when the shipping board shall certify to the commission that there are enough American ships at any given port or ports to carry the commerce, then the commission "may" require the railroads to deny their lower export and import rates to commerce that has been or is about to be carried in foreign bottoms.

Because the board certified in 1920 and later years that there were not enough American ships to carry the commerce, the section was suspended from time to time. About two weeks ago, as a bolt from the blue, without hearing, at least public hearing that had been advertised, the board certified to the commission that there were enough ships.

Immediately the question was raised as to whether that word "may" gave the commission any discretion as to the application of the law. The commission construed section 28 as giving it no discretion whatever. Therefore it rubber stamped the certificate of the board and told the railroads to get ready to put into force the provisions of the law by May 20.

Reed's Statement

In a statement to the Shipping Board Mr. Reed said the board when it made its certificate to the Interstate Commerce Commission apparently failed to give consideration to the movement of petroleum products in bulk, which could be moved only in tank steamers, built especially for that kind of traffic.

Nearly 100 refineries, he pointed out, were situated in the interior of Louisiana, north Texas, Arkansas, Oklahoma, Kansas and Missouri, engaged in manufacturing gasoline and kerosene for export under specifications of the trade in the countries where they are to be consumed.

Under the practices of the railroads, he said, it was necessary for the refiners to provide tank cars to carry their products to the ports for storage, blending and mixing for the foreign market. Generally speaking, he said, the storage capacities of the refineries at the ports was small. Therefore, he said, it was necessary for the refiners to make frequent and prompt shipments to the ports. The export terminals of the Sinclair Refining Co., he said, were located at New Orleans. Its tanks have a capacity ranging from 35,000 to 85,000 barrels capacity from which are taken the kinds of products needed for producing the kind of product needed in any particular country.

Foreign buyers, he said, owned their own tankers or reserved to themselves the right to designate the ship to take the product bought from the American producer. The ships of the foreign buyers, he said, flew the flags of their own countries.

Law Harmful to Industry

"Any law that has for its purpose the restriction or prohibition of the right of the foreign buyer to use his ships in the transportation of oil overseas after it is bought, in cargo quantities and becomes his property," said Mr. Reed, "would be harmful to the petroleum industries generally, and detrimental to the Independent exporter. Such a law would create a monopoly to the large American companies which own ships, and are in a position to transport the oil overseas at actual operating cost of the steamer.

"The large companies, having refineries at tidewater, pipe lines to bring the crude to their refineries and tank steamers to take their products to foreign countries would not be amenable to the law at all." He said enforcement of the section would mean control of oil exportation from the United States by them.

The tank ships owned by foreign buyers, Mr. Reed said, were acquired for the express purpose of enabling the foreign buyer to draw his supply of oil from the country offering the best advantage. Enforcement of section 28, he said, would have the effect of depriving the American exporter of the opportunity to compete with other countries in the sale of petroleum products, although the United States, in 1921, produced 65 per cent of the petroleum supply of the world.

He said the fact that in 1921 the rest of the world produced only 35 per cent was not to be taken as showing that foreigners would have to come to this country for oil because the share of the rest of the world was increasing and that further stimulation would result in a much faster increase of the production not in American hands. Twenty-two foreign countries, he said, were producing oil and that their potential production is sufficient to supply the markets now supplied by Americans.

"Section 28 would not and could not serve the purpose its authors intended, but its enforcement, so far as it relates to petroleum products in bulk is concerned, would destroy the export market of the Independent refineries located in the interior, and also destroy the trade of the Independent exporter, for the reason that the discrimination in freight rates from the refining points to tidewater would be prohibitive," said Mr. Reed. The Independent exporter, he said, could not continue in business with such increases in the inland proportionals of the transportation costs.

The Standard Oil Co. interests, he said, owned 118 of the total of 393 American tankers, or more than one-third of the oil tankers. With that fleet of ships, with pipe lines to the coast and with refineries on the coast, the speaker said, the Standard companies, could and would control the export of petroleum products from the United States, to the exclusion of all Independent companies.

At present Mr. Reed told the board it owned 50 tankers, all of which were advertised for sale, only 11 of which were in general service, the rest being out of commission or in the board's own service, some serving as storage ships because the board bought more fuel than it could use as fast as it was delivered.

Western Trunk Lines Demand General Oil Rate Investigation

By J. C. Chatfield
STAFF REPRESENTATIVE

TULSA, March 24

A NEW element was injected into the Southwestern oil rate tangle this week when Western Trunk lines filed a petition with the Interstate Commerce Commission asking for a general investigation into rates on petroleum and its products from all points of origin west of the Mississippi to destinations in Western Trunk line territory.

From the petition of the Western Trunk line carriers it is evident that all is not peaceful among the railroads themselves and that the general rate case which has been brewing for a year or more will not be an out and out fight between refining groups and the railroads but that it will be a general free-for-all battle royal with the railroads doing a little hitting at each other, as well as defending themselves against the attack of various refining groups.

Apparently in an attempt to forestall the hearing of the refiners' side of the question first the western trunk line roads ask that two complaints recently filed with the commission by oil companies be consolidated with their petition and the consolidated case set for an early hearing. These are the complaints brought by the Miller Petroleum Co. and others in Group 2, and the Kansas City case filed by the Sinclair Refining Co., which allege rates, from Kansas City are too high in relation to rates from more distant groups in the southwest.

The Western Trunk lines complain bitterly in their petition that the Southwestern lines have not taken all that was coming to them under former I. C. C. cases and that the results have been constant complaints and demands from shippers which threaten revenues.

Specific reference is made by the carriers to the case brought by the Western Petroleum Refiners Association on Dec. 4, 1919, which was decided by the commission on Feb. 21, 1922, a little over a year later. As a result of that case the commission found that carriers would be justified in charging a differential of 10.5 cents over Group 3 for shipments originating in the Burkburnett (north Texas) group, 13 cents over Group 3 for the Shreveport group and 15.5 cents over Group 3 for the Ranger group. The carriers point out that in place of taking advantage of this permission, the Southwestern lines have been carrying Shreveport goods at the same rate as Group 3, have collected a differential of only 2.5 cents from north Texas and 5.5 cents from Ranger.

In effect, the trunk lines complain that action of the Southwestern carriers has created a mal-adjustment of rates from north Texas and Shreveport fields on one hand and from Oklahoma and Kansas fields on the other, to the same destinations. They assert that shippers are constantly harassing them with demands for reductions as a result.

The railroad request is for an investigation to be initiated by the commission. They want the national body to prescribe reasonable rates from competing groups of origin and "reasonable maximum and minimum differentials between the several groups of origin."

By making that demand the trunk line carriers appear to want the power of Southwestern lines to establish differentials between competing groups limited by both maximum and minimum.

Specific mention is made to the two recent complaints which have been filed by Kansas refiners. They think their interests are menaced by the Group 2 case of the Miller Petroleum Co. and others and the Kansas City case filed by the Sinclair Refining Co. They appear to have a foreboding that Group 3 refiners are about to jump into the fight with a case of their own which would further disturb their peace of mind.

The Western Trunk lines are apparently worried because recent cases filed with the commission have not named the Southwestern lines as defendants but have centered their attack on the carriers making ultimate deliveries. Statement is made in the petition that they (Western Trunk lines) have tried to get the consent of Southwestern carriers to an adjustment which would eliminate future difficulties but that the Southwestern lines have refused.

First hearing of the Kansas (Group 2) case was to have been held at Kansas City on March 19, before Examiner Gault. By strenuous last minute efforts the carriers obtained a postponement of this hearing.

It is now evident that the carriers were sparring for time when they asked for the postponement. They desired to place their present petition before the commission and obtain an answer which would open the entire rate question and not place the western trunk lines in the attitude of being defendants in the position of seeking to defend rates which they, themselves, do not entirely think just.

Opening of the whole rate question has been ardently desired by Group 3 refiners for some time. They are ready and willing to enter a general investigation and have a new set of differentials established to take the place of those which have gradually been broken down by competing railroads during the past few years.

In effect, the Kansas cases now filed with the commission would without doubt have grown into general rate cases before they were through. Nearly every refiner in the Southwest was prepared to intervene in the case and a number have already been permitted to do so by the commission.

Shortly after the Group 2 case was filed it became known that Group 3 refiners were preparing a rate case setting forth their views as to what differentials should be. That case, or series of cases, has not been filed pending developments such as have taken place during the past week.

It is understood that the Interstate Commerce Commission has not been particularly well pleased with the shape rates have been assuming in the Southwest. It has been said by some refinery traffic managers that doubtless the Commission would welcome a petition for a general investigation. It now remains to be seen, however, whether that view is correct.

The Western Trunk Line petition is signed by W. E. Andrews, R. H. Widdicombe, A. B. Enoch, J. N. Davis, C. S. Burg, H. H. Larrimore, K. F. Burgess, M. G. Roberts, L. H. Strasser, H. A. Scandrett and F. H. Towner.

A Strategic Move

THIS latest move of the western trunk line roads in asking an investigation into rates and the throwing into this case of two pending oil company cases is looked upon by A. E. Heiss, Washington representative of NATIONAL PETROLEUM NEWS, and exceedingly well versed in rate matters, as a plan of the roads to prevent reductions in their own rates by forcing up those from the more southern groups. He says:

"The petition is in the nature of a demand that the rate body put the law on the southwestern lines and compel them to charge higher rates, to the end that the complaining western trunk lines may not be accused of maintaining rates that are relatively too high from the Mid-Continent groups."

Osage Sale Brings Fourteen Millions All Previous Records Broken

By A. F. Hinton

STAFF REPRESENTATIVE

PAWHUSKA, March 22

WHAT may prove to be the last great sale of Osage leases wound up today after the first two-day session of the 22nd of these affairs held since 1912. All previous records as to prices paid for leases, initial bids, and total amount of money realized were broken. The number of tracts passed without bids also was greater than at any previous sale. In fact, the oil men passed up more acreage than is usually included in an entire sale, thus bearing out the oft-heard statement that most of the sale would come under the "rummage" characterization.

The two-day sale was replete with interest from many angles. Aside from the fluency with which millions of dollars were bandied from mouth to mouth as the "big boys" nodded their heads in time with Colonel Walters' pleading gestures, and disregarding for the moment the huge prices paid for Burbank tracts popularly supposed to be in the pay zone, the most interesting aspect of the sale was the presence of a number of companies not heretofore represented at similar affairs in the past. This, coupled with the willingness of these and other companies not previously considered aspirants for possession of any of the million-dollar tracts, to swap wallops with the biggest of the big companies, gave spice to the occasion.

At other sales Burbank tracts have ordinarily gone to the Gypsy, Phillips Petroleum Co., Skelly Oil Co., Carter Oil Co., or Sinclair Oil & Gas Co. The Prairie Oil & Gas Co., although active at the sale preceding the latest one, did not secure any leases then, and before that had allowed several sales to go by without taking any interest. This time, the big company made a show of strength by sending a delegation of several of its principal executives, and went after several tracts with much eclat and determination.

It is an axiom of an Osage sale, that, when the Prairie goes after a tract, things begin to pick up generally, for those boys don't fool around with their opponents. They evidently fix upon a price they are willing to pay, and they do not care how quickly the bidding reaches that figure. When Nelson K. Moody speaks right out in meeting and tacks on $25,000 or $50,000 to the last bid, after perhaps a half-hour of comparatively small bidding on a tract, it often has the effect of driving all opposition to cover.

Not so, this time, however. The Prairie met foemen worthy of its steel, who gave it battle right willingly, while other companies who heretofore had dominated these Burbank sales, also were hard put to defend themselves against these new antagonists. Probably no man would have predicted two days ago that Cosden Oil & Gas Co. was destined to step into the arena and emerge victorious with two of the highest priced tracts sold on the first day of the sale, paying for them the great sum of $3,745,000.

Empire Makes Highest Bid

Neither did anyone suspect that the Empire companies had designs on any of these luxurious tracts heretofore looked upon as the private stamping-ground of the select few. Yet this group of companies was represented at the sale by a number of executives, bidding in the name of the Midland Oil Co., who nonchalantly kept in front of the field when the going was roughest, and got away with two of the highest priced tracts, for which they paid in the aggregate $3,570,000. Not only that, but they set a mark for others to shoot at when they bid in tract 626 on the second day for $1,990,000, the record price at a sale where records were falling on all sides as leaves in the autumn.

Then there was the Mid-Kansas Oil & Gas Co., making its first appearance at an Osage sale since it became a Burbank operator through its purchase of the Waite Phillips properties last fall. This company evinced no fear of any competitors, nor did it clutch its heart and fall back gasping when the million-dollar mark was reached and passed. On the contrary, its representatives were in the thick of the fight at all times, and were active bidders on all the highest-priced tracts right up to the point at which they finally sold.

Also, who'd a-thunk, as the feller says, that J. Edgar Pew, of the Sun Oil Co. and Twin State Oil Co., would have calmly set aside all precedent, and shattered all existing records by starting the bidding on a certain tract at a cool million dollars? It is true that he didn't get the tract, and it is possible that he had no intention of getting it unless it could be gotten at the price he named (which he knew it couldn't) but the fact remains that he started her off at a million, gaining thereby undying fame in Osage annals. He did some bidding, too, on many other tracts, paying $605,000 for one of them, and quit only because Auctioneer Colonel Walters insisted upon calling him "Dad."

Records Fall Fast

The record for prices for single tracts was broken five different times during the two days, three times on the first day, and twice on the second. It is well to bear in mind that, in order to break this record it was necessary to pay more than $1,600,000, or $10,000 an acre, for the right to drill an unexplored 160-acre tract.

We have already mentioned the Empire's record-smashing bid for tract 626. Next to it came Cosden's successful bid of $1,955,000 for tract 310, closely followed by that of the Prairie Oil & Gas Co., of $1,825,000 for tract 309, the SW¼ of 13-27-5. The next highest was paid by Cosden again, $1,790,000 for tract 311, sold the first day. Phillips Petroleum Co., determined that it would get in the big play at any cost, paid $1,765,000 for tract 625. Another tract that sold for more than a million and a half, although not a record-breaker, was No. 308, bid in by the Midland Oil Co. (Empire) for $1,580,000. It has got so now at an Osage sale, that anything less than a million and a half is chicken-feed, and scarcely worth recording.

The Osages, the poor, down-trodden remnants of a once mighty race, had to be content with a mere fourteen million dollars as a result of the sale. While this would seem to be ample recompense

to them for the sacrifices they make in allowing the pale-face to come upon their reservation and pay them a one-sixth royalty in addition to the millions already mentioned, it seems they were discontented with the result.

They showed their displeasure in at least one instance when the Osage council rejected the bid of Charles B. Peters and associates for tract 621, the SW¼ of 17-27-6. With their heads full of the millions, they couldn't see his bid of $37,000 for a tract on the very edge of Burbank, on which even the most optimistic cannot see where more than five producing wells possibly can be had. And it would not be surprising if the tract in question proves to be outside the pay altogether.

"Million Dollar Row"

The Gypsy Oil Co. had its eyes on several Burbank tracts, and had fully intended to make a determined effort to acquire them, but its name is conspicuous by its absence along "Million-dollar Row," as is that of the Carter Oil Co., which also showed signs of wanting one or two of the leases that finally sold for the highest prices. When they start 'em at a million, and one's mental limit is, say, a million and a quarter or such a matter, it doesn't take long for that mental mark to be left far in the rear. If a fellow stops to scratch his head, or look again at his map, or pinches himself to see whether it is all a dream or not, the bidding has gone up another hundred thousand or so by the time he returns to consciousness, and he can only mutter "what's the use" and let it go at that.

That famous $1,600,000 tract of the Gypsy's paid out handsomely, and in a short time, too, it is said, but it is a large question in the minds of many observers whether some of the tracts that sold for much more than that at this sale will do as well. The Empire's $1,990,000 tract especially is one that is causing many arguments which only time and well records can settle. On the surface, it seems that the tract to the south of it, which sold for $1,790,000, ought to be the better of the two. Let us here express the hope that both of them will prove to be excellent investments.

May Be Last Big Sale

In the initial paragraph of this article the statement was made that this possibly will be the last great Osage sale. There are several reasons for thinking that this is so. In the first place, the Burbank field is practically outlined in all directions, or will have been when the tracts disposed of at this sale have been drilled up. Its direct northwest-southeast trend has already carried it well into Kay county, where leases are out of reach of the Osage council, and it is possible that most of what will prove to be the final productive limits of the field is now under lease. It does not appear probable that another Burbank ever will be found in the Osage, and, lacking such a field, Osage sales in the future may descend to the mediocrity which characterized them before Burbank flashed upon the scene. Of course, it is well to remember that nobody, geologists or others, ever dreamed that Burbank would be the field it has been, for it was started on the strength of only a small structure which underlies but a fraction of the fields present area, and from this standpoint, another field as good may yet lurk beneath the Osage's rolling surface.

This sale was the 22nd since Nov. 11, 1912, when the first auction was held. In those 22 sales, the Osages have disposed of 598,218 acres, for which oil men and companies have paid in bonuses the almost inconceivable sum of $90,929,923.00. This is at the rate of $151.96 per acre for the entire 22 sales, or practically $40,794.00 for each of the 2229 names on the Osage tribal roll. This in addition, of course, to the added millions that have flowed into the Indians' coffers as royalties, which run as high as 20 per cent of production in cases where a lease averages 100 barrels per well per day for 30 days.

In the most recent sale, more than 100,000 acres were offered, but only 51,000 acres were sold. Not only was it the largest amount of acreage ever offered at one of these sales, but it was also the greatest amount ever sold, in spite of the large number of tracts passed without bids. The largest previous sale was back in June, 1919, when 38,451 acres were sold. The most recent sale brought in $14,156,800, as compared with the previous high record of $10,889,700 at the sale of June 28, 1922.

The East Side

Although the west side tracts, which included those in the Burbank field, naturally attracted most of the attention, and incidentally commanded by far the most money, there were a few tracts on the east side which were wanted by several companies, and some brought good prices after spirited bidding. Probably the most noteworthy of these minor-league battles was that conducted by the Red Bank Oil Co. on one hand and the Marland forces on the other, the bone of contention being tract 560, the SW¼ of 20-23-8. The Red Bank, represented by its president, Homer T. Lamb, gave lusty battle to its larger and more formidable competitor, and came out on top in the end, getting the lease for $230,000, which was by far the largest price paid for an east side tract during the sale, or for several previous sales.

This lease offsets good production developed in recent months both by Red Bank and Marland, and, although it has a deep dry hole on it, evidently is figured to be good for at least 40 acres of productivity. The Red Bank sprang a surprise on the boys in general by paying this price, and by its evident willingness to pay more if necessary to get the tract, a surprise similar to that engendered by the huge expenditures of Cosden. Both were dark horses in their respective races, and not figured seriously in the money.

The next highest-priced east side tract was No. 107, the SE¼ of 27-29-11, which was sold the first day. This piece was bought by the Beacon Oil Co. for $21,500, thereby giving much cause for gratification to K. C. Heald, the government geologist who passes upon the amount of all bids. He turned down a bid of about $5,000 for this tract three years ago, and is now proved to have been right.

Analysis Of The 22nd Osage Sale

Figures given are net, as they do not include tracts on which bids were rejected during the sale or after it.

Date	Tracts Offered	Acreage Offered	Tracts Sold	Acreage Sold	Amount Paid	Price per Acre
East Side						
Mar. 18 ...	300	47,507.23	148	23,226.07	$ 290,600	$ 12.51
Mar. 19 ...	298	47,198.15	144	22,715.85	517,800	22.79
Total East Side	598	94,705.38	292	45,941.92	$ 808,400	$ 17.59
West Side						
Mar. 18 ...	16	2,560	14	2,240	$ 8,052,000	$3,594.64
Mar. 19 ...	19	3,040	18	2,880	5,296,400	1,839.03
Total West Side	35	5,600	32	5,120	$13,348,400	$2,607.11
Mar. 18-19	633	100,305.38	324	51,061.92	$14,156,800	$ 277.25

FOLLOWING its custom of past years, NATIONAL PETROLEUM NEWS published on both days of the Osage sale at Pawhuska a record of the tracts sold, the price and the purchaser. This was distributed to oil men attending the sale and constitutes an official record of the transactions.

Readers desiring to keep this record on file will be sent a copy upon application to the Tulsa Bureau of NATIONAL PETROLEUM NEWS, 608 Bank of Commerce Bldg., Tulsa.

Testing Of Gasoline Tonics Feature Of St. Louis Jobbers Meeting

By Ward K. Halbert

STAFF REPRESENTATIVE

CHICAGO, March 24

REPRESENTATIVES of General Motors Research Corp., Dayton, O., will install equipment to test motor tonics in the Statler Hotel, St. Louis, during the annual convention of the National Petroleum Marketers Association, April 7, 8, 9 and 10.

L. V. Nicholas, president of the association, received telegraphic confirmation of final arrangements from Thomas Midgley today.

The apparatus discussed in the March 19 issue of NATIONAL PETROLEUM NEWS, which can demonstrate quickly and simply whether a gasoline dope will perform what its promoters claim for it will be at the disposal of the convention.

Jobbers who have some concoction under consideration as a possible adjunct to their business may have a sample tested free at the convention and the result of the experiment will be open to everybody.

Considering this service likely to be one of chief centers of interest at the convention, Mr. Nicholas has arranged to install a temporary laboratory on the floor with equipment exhibition roped off in a large alcove heretofore intended for lounge and lobby.

A combination of forces is about to make the St. Louis convention record-breaking in spite of comparatively little promoting. As a matter of fact, no convention promoting had been conducted from Chicago until this week when the opening guns of the publicity campaign were sounded in the organization's "Bulletin" dated March 20.

It has been whispered about in the trade nevertheless that the spring meeting is going to be a "daisy" and the effect has been good.

Oil salesmen traveling out of St. Louis, whether calling on the jobbers or the general trade, never fail, when it comes time to say goodby, to mention the St. Louis convention, April 7, 8, 9 and 10. Somebody is responsible for that ingenious method of doing word-of-mouth advertising, probably the St. Louis Petroleum Club. Jobbers all over the middle west seem to know in a vague way that St. Louis is preparing a spectacular show, trying to eclipse the pageant staged in Milwaukee last fall.

BULLETIN

CHICAGO, March 25.—The Illinois Central is arranging special service to carry oil men to the St. Louis convention. Special sleepers will be carried on its 11:30 p. m. train the nights of April 6th and 7th. Special parlor cars are also scheduled for the 10 a. m. train the same dates.

Reservations for these special cars may be made through W. G. Ferstel, Illinois Central Railroad, Chicago. The usual certificate system is in effect for obtaining round trip at fare and a half rates.

And a Spring Meeting

Springtime conventions of the National Petroleum Marketers' Association have always been touted as quiet affairs. It has been customary to sell fewer spaces to exhibitors because manufacturers of equipment are harder to interest in the spring. They say oil men have already done their year's buying—but not so this time. The seventeenth floor of the Statler Hotel was laid off into 52 booths and they were all sold and part of the price collected for every one, a full month before the first day of the convention. A list of exhibitors is published herewith.

A great deal of interest has been aroused by state jobbers' organizations. Many state groups now are circulating their own organ of publicity among their members. These have been used to good advantage for the national association's convention. President J. L. Murray of the Illinois Petroleum Marketers' Association has issued public announcement that the next state meeting of the Illinois jobbers will be held in St. Louis at the Statler Hotel on Wednesday, April 9, at 3 o'clock in the afternoon. Officers and directors of other state groups are planning similar action, it is learned here.

Wednesday, April 9, is the afternoon when all of the state groups will be encouraged to meet, whether they decide to have regular or special meetings on that occasion. That forenoon, they will have been given a chance to learn all about the mutual billboard advertising campaign conducted by the jobbers in Wisconsin, hooking up with their Independent coupon exchange. This will permit jobbers in other states to take action similar to the Wisconsin movement and spread the Independent insignia to national dimensions this year. Illinois already has the matter under consideration and it will be brought up for action in St. Louis.

Persons who have questioned the steady growth of the Independent insignia in popularity and prominence will have a chance in St. Louis to check up on the showing it is being given this year. In Wisconsin 660 billboards are already contracted for three summer months, none of them to carry private publicity but all to advertise Independent oils. Out in Iowa the Hawkeye Oil Co. is making an effort to get locations in the state for 200 boards, but is encountering some difficulty, having launched

Exhibition at the National Petroleum Marketers Convention

American Oil Pump & Tank Co, Cincinnati....47
Beacon Equipment Co., Hamilton, Ohio....17
Bennett Injector Co., (The) Muskegon, Mich....30
Blackmer Rotary Pump Co., Petoskey, Mich....24
Bowser, S. F., & Co, Ft. Wayne....38 & 39
Chicago tubing & Braiding Co., Chicago....45
Clear Visible Pump Co., Wichita, Kans....16
Columbian Steel Tank Co., Kansas City....2
Curtis Pneumatic Machinery Co., St Louis....51
Dayton Pump & Mfg. Co., Dayton, Ohio....32
Doty Pump Co., St. Louis....3
Gilbert & Barker Mfg. Co., Springfield, Mass....52
Globe Manufacturing Co., Battle Creek, Mich....27
Graver Corporation, East Chicago, Ind....20
Guarantee Liquid Measure Co., Rochester, Pa....21
Hayes Equipment Mfg Co., Wichita, Kans....49
Heil Company, (The) Milwaukee....35
Leader Iron Works, Decatur, Ill....6
Marvel Equipment Co., Cleveland, Ohio....26
McSavaney Sign Co., (The) Springfield, Ohio....40 & 41
Metal Hose & Tubing Co., Brooklyn, N. Y....14 & 15
Miller Petroleum Co., Kansas City....50
Milwaukee Tank Works, Milwaukee....46
Mullens Body & Tank Co, St. Louis....5
National Checking Co., St. Paul....7
National Gasoline Hose Co., Brooklyn, N. Y....25
National Petroleum News, Cleveland, Ohio....1
National Recording Pump Co., (The) Dayton, Ohio..18 & 19
Neil, William, & Co., Chicago....22
Rand-McNally & Co, Chicago....28
Royer Pump & Equipment Co., Hamilton, Ohio....9
Sawyer Pump & Tank Co., Boston....33
Sawyer Specialty Scales Co., Jacksonville, Fla....11
Springfield Visible Pump Co., Springfield, Tenn....29
St. Louis Pump & Equipment Co, St. Louis....42 & 43
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y....8
Tokheim Co., (The) Cedar Rapids, Iowa....36
Tokheim Oil Tank & Pump Co, Ft. Wayne....4
United Metal Hose Co., Inc., New York City....23
United States Air Compressor Co., Cleveland, Ohio....31
Visible Pump Co., (The) Findlay, Ohio....37
Wackman Welded Ware Co., St. Louis....10
Wall Pump & Compressor Co., Quincy, Ill....34
Wayne Tank & Pump Co., Ft. Wayne....12 & 13
White*, Edward, Chicago....48

*Representing Midland Specialties Co., Des Moines Foundry & Machine Co., Jiffy Oiler Manufacturing Co., and Brown Sheet Iron & Metal Co.

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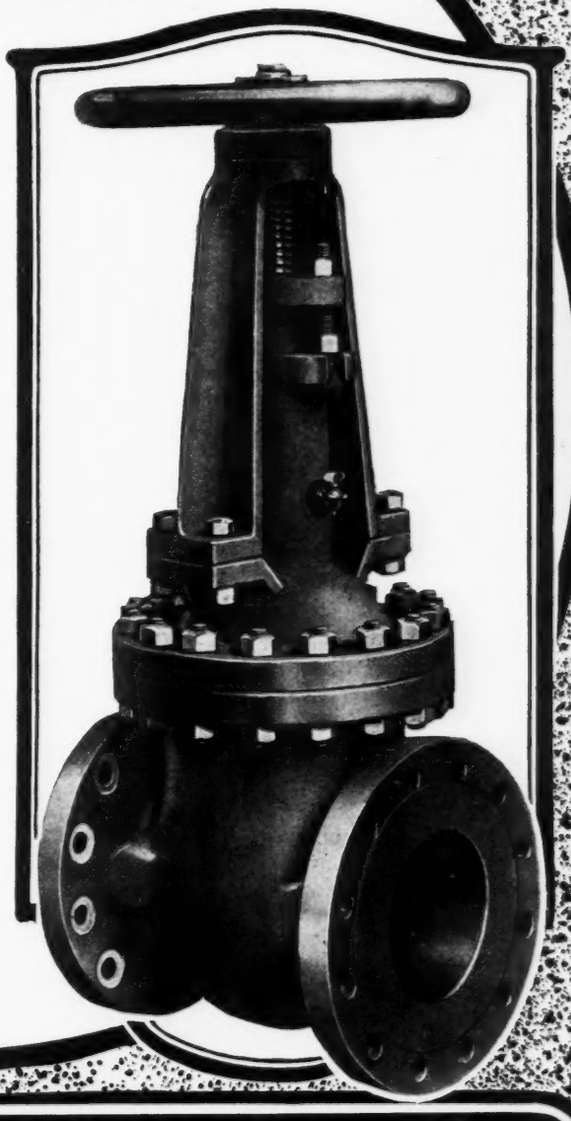


VALVES

the campaign late in the season. The Hawkeye insists that their boards will carry no Hawkeye advertising but only the insignia of Independence, boosting the business of all members of the association's advertising campaign as much as their own.

Probably the most interesting item scheduled on the program for the N. P. M. A. convention is a debate over the matter of a 2-cent vs. a 3-cent service station differential. It has been said openly a few times and privately many times, that Standard Oil Co. of Indiana territory is headed straight for a 3-cent margin, the same as exists in eastern marketing districts. This thought has spread rapidly since a 4¾-cent margin has been openly recognized in Chicago recently.

There is going to be no set program in St. Louis. The open forum discussions which have characterized all conventions of the N. P. M. A. since the close of the consolidation meeting at the Drake Hotel Chicago in 1921, will be used this time. President L. V. Nicholas of the association mentioned several probable topics in his last "Bulletin" to the membership, including Advertising; Collective Buying; Marketing Costs; Coupon Exchange Plan; and Reducing Insurance Rates.

The last day of the convention will be featured by another big prize-taking contest like the one staged in Milwaukee last fall. The plan is a simple one. Jobbers buying equipment from exhibitors get a receipt for the money expended; later they get a "raffle" ticket for every $50 worth of receipts; finally the prizes are drawn and awarded to holders of lucky tickets. The only way one jobber can get an advantage over another is to buy more stuff from the exhibitors.

Sub-sessions at the big convention will not be confined to groups of state jobbers. Secretary Fred Buehler of the South Dakota Independent Oil Men's Association has suggested a national meeting of state association presidents and secretaries. To his suggestion has been added the probability of a national get-together of field secretaries to talk over their mutual problems and exchange ideas and experiences.

Comparatively little is known of the entertainment features of the St. Louis meeting. The Petroleum Club of that city is holding in reserve the news of their program until it is ready to be sprung. Mr. Nicholas asserts that plenty of entertainment is being provided for the women who accompany their husbands to the convention and that the annual banquet and ball will take place.

Information has come from the Statler Hotel that the advance reservation of rooms for this meeting is larger than the advance reservation for the American Petroleum Institute meeting.

Already it has been necessary for the N. P. M. A. officials to decline to make reservations for other persons than members of the association, because the official reservation has been so heavily taxed.

N. P. A. Spring Meeting Set For April 23

CLEVELAND, March 24. — The semi-annual meeting of the National Petroleum Association will be held Wednesday, April 23, in Hotel Riverside, Cambridge Springs, Pa. This is a week later than the date that had been set previously.

No program has yet been drafted but reports on the general oil situation by the president of the association, Col. U. G. Lyons, the general and Washington counselors, treasurer and heads of the various departments, will be made.

The semi-annual meetings are also open to a large number of discussions of current topics. There will be a meeting of the board of trustees either at noon or in the evening of the 23rd and the entire association program will be completed in one day.

Gasoline Manufacturers Announce Program

Staff Special

TULSA, Mar. 22.—Announcement of the program for the third annual convention of the Association of Natural Gasoline Manufacturers was made today by A. V. Bourque, secretary. The convention is to be held in Tulsa on April 23 and 24.

At the morning session of the first day D. E. Buchanan, vice president of the Chestnut & Smith Corp., will deliver the president's annual message following an address of welcome by J. Burr Gibbons, president of the Tulsa Chamber of Commerce.

Kenyon L. Reynolds, assistant general manager of the Pacific Gasoline Co., Los Angeles, will complete the morning program with a paper on the "Future of the Natural Gasoline Industry in California."

L. F. Bayer, manufacturing manager of the Tidal Refining Co., will read a paper on the "Stabilizer in Operation" at the afternoon session. At the convention a year ago the stabilizing process was discussed before the natural gasoline men. Since that time the Tidal has been the first company to place a unit of the process in operation.

D. B. Dow, petroleum engineer of the Bureau of Mines, Bartlesville, will read a paper on the "Recovery of Still Vapors in Straight Run Refineries." This is a subject on which Mr. Dow has made an intensive study during the past two years. He has published several papers as a result of his investigations.

Officers of the association for the new year will be elected at the opening of the meeting on the second day. Following the election A. M. Ballard of the Sun Oil Co. will lead a general round table discussion of plant operation. This session will be a general round table discussion such as the association has held successfully at some of its earlier meetings.

W. K. Holmes, superintendent of the West Tulsa refinery of the Texas Co., will present a paper at the afternoon session on the place of natural gasoline in a straight run refinery. Ray Short, superintendent of the casinghead gas division of the Prairie Oil & Gas Co., will read a paper on "The Relation of the Producer to the Natural Gasoline Manufacturer."

E. L. Peck, superintendent of the natural gasoline division of the Empire Gasoline Co., is to present views of the manufacturer on the same subject. His paper will be "The Relation of the Natural Gasoline Manufacturer to the Producer." A neutral view of the same general question is to be given by Mr. Dow in a paper entitled "The Producer and the Natural Gasoline Manufacturer."

Business sessions of the convention will be held in the ball room of the Elks club.

The convention will close with a banquet at the Hotel Tulsa at which Victor Murdock of Wichita, Kan., will be the principal speaker. Mr. Murdock has recently resigned as a member of the Federal Trade Commission and his address is looked forward to by members of the association.

For the first time in the history of the association entertainment is to be provided for visiting ladies. Following the banquet there will be a dance and during business sessions Tulsa ladies will entertain feminine visitors.

Big Parade In Chicago Is Called Off

CHICAGO, March 24—The Chicago Oil Trades Committee has called off its street parade to be held the first day of the A. O. M. A. convention in Chicago, March 25. The statement of the committee in its circular letter is, in substance, that the demand on the part of oil companies and allied industries for privilege to enter floats in the parade was too large. If all who asked were allowed to enter floats, it is stated, the parade would be too long and would tie up traffic in the congested district. So rather than have anybody disappointed they gave up the parade idea altogether.

Bandits Rob Oil Stations

CINCINNATI, O., March 24.—Two armed bandits entered the Silver Tip Oil Station, the early part of the past week, and held up Thomas Ruddes, manager, whom they hurled down a flight of stairs into the basement. They escaped with $25, the contents of the cash drawer.

Deep Test is Fishing

CLEVELAND, March 24.—The deep test of the East Ohio Gas Co. in Freeport township, Harrison county, is down 5800 feet and has bailed in the hole. The test is believed to be near the Clinton lime, the objective horizon. The fishing job is not looked upon as a difficult one and it is expected that the well will shortly be drilled into the Clinton.

Moves Are Launched To Standardize Barrels And Assembled Tanks

By Special Correspondent
WASHINGTON, March 24

SIMPLIFICATION of manufacture, a term the industrial world generally has heard much of since Herbert Hoover has been Secretary of Commerce, is now being effected in two lines directly allied to the oil marketing industry—the manufacture of tanks for the storage of petroleum products at marketing stations principally, and the manufacture of steel barrels.

A conference of tank manufacturers with various associations and officials of the department of commerce was had here recently at which recommendations were made limiting the variety of tanks which are shipped assembled from factories.

On March 26 steel barrel manufacturers, representatives of oil associations and associations from other industries using steel containers as shipping packages, will meet at the department of commerce to attempt to eliminate many varieties and confine their manufacture to a relatively few types and varieties.

As a matter of fact simplification of manufacture, or standardization, as the move is sometimes called, is not new to the oil industry. It was in fact one of the first lines of industry to take up this imporatnt work, largely at the suggestion of the purchasing agents' association of Tulsa, and certain manufacturers of oil field equipment who were quick to see the advantages that would accrue to both the manufacturer and the oil field user if unnecessary duplication in manufacture and carrying of stocks could be eliminated.

The producing industry made its first move in the step of standardization through conferences of manufacturers and big users of rig irons, who worked out virtually the standardization of this equipment that parts made by various manufacturers could be interchanged.

Later the standardization of casing was undertaken by the Mid-Continent Oil & Gas Association, working with the American Petroleum Institute and other producer associations. This work has been an important part of the institute program the past year and better, and probably will be developed to the point that many types and sizes of casing now manufactured will be eliminated entirely.

The first heard of by the oil industry for standardization in types and sizes of steel barrels was at the Chicago convention of the American Oil Mens Association in Chicago last fall, when J. M. Finney, president of the Cleveland Steel Barrel Co., and chairman of the specifications and standards committee of the Steel Barrel Manufacturers Association, told the oil men there that standardization work in that field had been going on for some years and urged the oil industry to cooperate with the barrel manufacturers in seeing that the program of standardization of steel barrels took ample care of its needs.

Mr. Finney suggested reducing the types of steel drums manufactured for use by the oil industry to three sizes, 55-gallon barrels, 30-gallon half barrel and 15-gallon keg.

The conferences at Washington, of course, embrace a great deal more than the barrel and tank manufacturer and the oil business. All industries using the equipment of these manufacturers are represented and many of them are taking considerable interest in the work. To see that its own needs are taken care of the various associations in the oil industry should take an active part in these and other conferences that will be held on this subject.

The credit for initiating this work of standardization or simplification of manufacture in American industry, generally belongs to Secretary Hoover. It is one of the ideas he carried into his work at Washington and already much has been accomplished in several lines of industry.

Eleven Sizes of Tanks

If the Division of Simplified Practice of the Department of Commerce can persuade manufacturers and users of tanks for the storage of gasoline and other petroleum products to agree upon standardization of shape and size of such tanks, and tanks for other purposes, the petroleum tanks will be limited to the following sizes, measured by capacity: 280, 550, 1500, 2000. 3000, 4000, 5000. 10,000, 12,000 15,000 and 20.000 gallons.

These capacities are to be applied to tanks shipped assembled. They have nothing to do with tanks erected by oil companies at refineries or on tank farms. The primary purposes are safety and elimination of useless expense to manufacturers.

The capacities were agreed upon at a conference last week of the National Board of Fire Underwriters, National Fire Protection Association, American Institute of Architects, National Association of Master Plumbers the American Engineering Standards Committee, the Chamber of Commerce of the United States and representatives of manufacturers of tanks sold for the storage, in cities, or petroleum products, air and water.

Eastern manufacturers took the leading part in the conference. They made tentative suggestions as to what should be done. They are to hold a conference in Chicago with western manufacturers. with a view to persuading the latter to agree to the elimination of the odd sizes and shapes and the reduction of the sizes to the twelve mentioned.

Provide Manholes

As to tanks for petroleum products it was suggested that in all storage tanks of 1000 gallons or greater manholes be installed to provide for cleanmg and thus increase safety. Manufacturers reported that they were prepared to furnish from 30 to 150 types of tanks, which according simplification committee, means there is a great waste in the manufacture of tanks because each type means patterns, tools and cutting of material in a wasteful manner.

Representatives of 38 companies engaged in the manufacture of steel barrels will join with those from 28 national organizations interested in the consumption or distribution, or with transportation problems connected with barrels, in a meeting March 26 under the auspices of the Division of Simplified Practice.

Surveys made of the industry indicate that, while steel barrels and drums are made in eight types, with a total of more than 75 varieties, the preponderance of production lies in 15 varieties. It is to consider the possible elimination of varieties which are so seldom used that they constitute a drag on production, cost, and service that the meeting will be held.

Consuming interests will be represented by agents of the American Drug Manufacturers Association, American Exporters and Importers Association, American Institute of Marine Underwriters, American Manufacturers Export Association, American Petroleum Institute, American Pharmaceutical Manufacturers Association, American Railway Association, Asphalt Association, Association of National Gasoline Manufacturers, Manufacturers Chemists Association, National Association of Paint Jobbers, National Association of Printing Ink Masters, National Association of Purchasing Agents, National Petroleum Association, National Petroleum Marketers Association, National Syrup and Molasses Association, National Varnish Manufacturers Association, National Wood Chemists Association, Prepared Roofing Association, Paint Manufacturers Association of the U. S., Turpentine and Rosin Producers Association, the Navy Department, War Department, Federal Spe-

cifications Board, Fabricated Production Department of the U. S. Chamber of Commerce, American Engineering Standards Committee Bureau of Foreign and Domestic Commerce and Bureau of Standards, of the Department of Commerce.

Manufactureres invited to attend include the following:

Atlas Steel Barrel Co., Meurer Steel Barrel Co. and National Enameling & Stamping Co. New York City.; R. E. Chapin Manufacturing Co. Batavia, N. Y.; Erie Steel Barrel Co. Erie Pa.; Manion Steel Barrel Co. Rousville Pa.; Petroleum Iron Works, Sharon, Pa.; W. B. Scaife & Sons Oakmont Pa.

Cleveland Steel Barrel Co., Draper Manufacturing Co., Hydraulic Pressed Steel Co., National Steel Barrel Co., Perfection Metal Container Co., Republic Steel Package Co., Cleveland.

American Steel Package Co., Defiance O.; Celina Manufacturing Co., Celina, O.; Ohio Corrugating Co. Warren, O.; Stevens Metal Co. Niles O.

Columbia Steel Tank Co., Butler Manufacturing Co. Kansas City; St. Louis Steel Package Co., Wackman Steel Barrel Co. St. Louis.

Detroit Range Boiler & Steel Barrel Co., Welded Steel Barrel Co. Detroit; Brown Sheet Iron & Steel Co. Minneapolis; Western Steel Products Co. Duluth. Wilson & Bennett Manufacturing Co. Chicago; Metal Barrel Corporation Peoria, Ill.; Nebraska & Iowa Steel Tank Co. Omaha; Pressed Steel Tank Co. Milwaukee; Hirsch Cooperage & Steel Package Co. Houston.

Out of 21 varieties of standard light shipping drums, a survey shows, two have had in three years a production nearly a million greater than the other 9 varieties in the same period. One variety of "Standard I. C. C. Drums" has a greater volume of production than 14 others in this class. In the item of "Bilge Barrels" one variety outnumbers in production the other two in this class by more than 500 times. Five varieties in the item of "Friction covered light drums" show nearly double the total production of the ten other varieties in this class; while three types of "Bolted Cover Light Drums" exceed the other ten in demand in this group. Production of one item in "Bilge Barrels, removable heads" is ten times that of the other in its class; while that of one item in "Removable head, I. C. C. Drums" is four times that of its nearest competitor in the group.

Cities Service Buys Tanker

NEW YORK, March 24—Cities Service Refining Transport Co., a subsidiary of Cities Service Co., has bought from the U. S. Shipping Board the 80,000-barrel tanker Shreveport. It will be used to transport California and Gulf Coastal crudes to the Cities Service Refining Co. plant at East Braintree, Mass. This acquisition gives the transport company four ocean-going tankers with a total cargo oil capacity of 275,000 barrels.

Revised Specifications Effective June 18

WASHINGTON, March 24.—Technical Paper 323-A, Bureau of Mines, containing revised specifications of the government for lubricants and liquid fuels, has been issued through the Bureau of Mines.

This paper, which carries the revisions from Technical Paper 323 which were published in the Feb. 13 issue of NATIONAL PETROLEUM NEWS, is officially dated March 18 and the revised specifications become mandatory in purchasing petroleum products for government uses June 18.

Government purchasers may put the new specifications into force before that day if purchasing agents so desire but after June 18 the new specification for lubricants and liquid fuels and methods for testing them the purchasing agents must be guided by the new specifications and tests.

Inasmuch as many states adopt the government specifications and methods for testing products as standards to be observed by sellers within their borders the adoption of the specifications and standards becomes a matter of importance to all sellers of petroleum products.

Announcement of the bureau said:

"Technical Paper 323-A includes specifications for aviation gasoline, motor gasoline, kerosene, marine and light house kerosenes, long-time burning oil, fuel oil and a considerable variety of lubricants. Methods for testing these various products are given in the paper.

"The Technical Committee on Lubricants and Liquid Fuels, which prepared these specifications, was formed by the Federal Specifications Board under the authority of the Bureau of the Budget. The technical committee comprises representatives of the various government departments and independent establishments. N. A. C. Smith, petroleum chemist, Bureau of Mines, is chairman of the committee.

"To assist the committee, an advisory board of representatives of engineering and technical societies has been appointed. Dr. T. G. Delbridge, of the American Society for Testing Materials, is chairman of this advisory board. Other organization represented are the National Petroleum Marketers Association, the Society of Automotive Engineers, the Western Petroleum Refiners Association, the National Petroleum Association, the American Petroleum Institute, the American Society of Mechanical Engineers, and the American Railway Association.

"Previously prepared Federal specifications for lubricants and liquid fuels and methods of testing such products were contained in Bulletins 1, 2, 3, 4 and 5 of the Committeé on Standardization of Specifications for Petroleum Products and in Technical Papers 298, 305 and 323 of the Bureau of Mines. All of these reports are superseded by Technical Paper 323-A, copies of which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a price of 15 cents."

Gibb Builds Grease Plant At Lima

By Special Correspondent

LIMA, O., March 24.—The Radiant Oil Co. plans to starts its new grease plant here running by April 15, according to Henry M. Gibb, vice-president of the company, who will look after the grease business particularly. He recently came to the Radiant company from the Gibb & Brown Co., Columbiana, and has been in the grease business for the past 15 years.

The Radiant's new grease plant will have a capacity of about 100 barrels a day. It is modern and up-to-date in every respect, with the machinery electrically driven. It will operate on a special process developed by Mr. Gibb, in which the use of filler is eliminated, making the same grade of grease which has in the past been approved by various axle and bearing manufacturers.

The Radiant company will market its grease output to the jobbing trade entirely, according to Mr. Gibb, under the trade name Charm. The company has quite an extensive oil business as well as its grease plant and operates service stations. B. F. Welty, Lima, is president and Mr. Gibb and E. E. Bessire are vice-presidents.

S. O. California To Junk 1,200 Road Signs

SAN FRANCISCO, March 24—The Standard Oil Co. of California has joined the numerous campaigns for the beautification of American highways by the removal of its signs that detract from the natural beauty of the scenes along western highways. It will remove at once nearly 1200 large permanent signs in California, Oregon, Washington, Nevada and Arizona. The company has made this announcement:

"Convinced that highway advertising signs detract from the natural beauty of the great routes of travel of the Pacific coast, this company has decided that it will erect no more such signs and that it will immediately remove all of its signs of this nature now standing. Hereafter the company will confine the use of signs to commercial locations.

"The company feels that the splendid scenery so characteristic of nearly all of the highways of California, Oregon, Washington, Nevada and Arizona should be unmarred, and on that account is willing to sacrifice the advertising value of the signs."

LEXINGTON, KY., March 25.—The Kentucky legislature has enacted a measure abolishing the office of county oil inspector. The repeal becomes effective in 90 days. The inspectorships have constituted some of the richest plums to be distributed among favored public office seekers, the one in Jefferson county of which Louisville is the county seat being worth $40,000 to $50,000 a year, according to oil men of the state.

Results Of Osage Sale Make Prospects Bright For Mid-Continent

By A. F. Hinton

STAFF REPRESENTATIVE

TULSA, March 22.

BURBANK came back during the past week, owing to the completion of 22 new wells which had been held back somewhat by bad weather, and also perhaps by the then imminence of the Osage sale, and increased its production 4880 barrels to a daily average for the week of 96,800 barrels. This number of good wells coming in in one week in almost any field would be sufficient to cause its production to increase, but it is probable that the field this week will resume the decline which set in two weeks ago.

As a result of Burbank's increase, and with the Cromwell field nearly doubling its production during the week, declines in other fields were sufficiently offset to cause the state's total to show an increase of 4055 barrels. The state is now estimated to be producing 392,550 barrels daily, as compared with 388,495 barrels last week.

Oklahoma is in the throes of one of the latest springs in the state's history, and miserable weather for field operations has been the rule rather than the exception ever since groundhog day. It is perhaps appropriate to state here and now that the said groundhog has forever established himself hereabouts as an infallible weather prophet. During March so far, Oklahoma has had 18 inches of snow, as compared with a normal snowfall of one inch for the entire month. This brand of weather, which is still in effect as we write, is no more conducive to successful field operations than it is to a rising gasoline market.

The principal event of the past week was, of course, the Osage sale, the huge prices paid for acreage there being still the principal topic of conversation among oil men in Tulsa. These sales always cause considerable irritation in certain quarters, especially among those who earn their daily bread by selling leases to the big companies. It irks them considerably to see these companies pour out their millions for Osage leases, just because they are in the Osage, when such prices are never dreamed of in other oil fields of the state.

It is encouraging to the industry, and makes the future look bright for the producer, to note how eagerly the big companies went after the desirable acreage at the sale. Encouraging because it shows that the big companies—and some of the smaller ones—have the money to buy the stuff they think they ought to have, and indicative of better times because a general concensus of opinion among the big companies apparently was that oil is going to be a scarce article and that it behooved each of them to acquire all they could at almost any price.

It is safe to say that every company in the Mid-Continent that felt strong enough to hope to obtain some of almost proven Burbank tracts was in there bidding at one time or another during the sale. Their desire for more production was unanimous and unmistakable, and their determination to obtain it was limited only by their purses or their good judgment. Any time three or four companies continue bidding on a tract until it is finally sold at only $10,000 short of a cool two million, and then sail in and try as hard for the next piece offered, it is safe to assume that they want production, and want it badly.

All of which means to the rank and file of producers that higher prices for crude are indicated as almost certain, and that a comparative shortage of oil looms up more strongly among the possibilities with every day that brings forth no new sources of large flush production. The weather which is now holding back drilling, and the comparative slowness with which the crude market is being advanced, render all the more probable higher prices and lots of drilling later on.

Wells Completed

In Oklahoma, during the week just closed, 54 wells were completed outside of the Osage, of which 31 were oil wells five were gas wells, and 18 were dry holes. On account of the Pawhuska sale requiring so much attention, no Osage report was available this week. These figures compare with 83 completions last week, divided 48 oil wells, 10 gas wells, and 25 dry holes.

The 31 oil wells included in this week's report had a total initial production of 8807 barrels, averaging 284.1 barrels per well. Although this is less than the initial production of last week's wells, it shows a higher per-well average. Then 48 wells brought in 9504 barrels of new production, with an average of 198.0 barrels per well.

Completions reported from Kansas this week totaled 11, of which six were oil wells, and five were dry holes, with no gas wells. Last week there were the same number of completions, divided five oil wells, one gas well, and five dry holes. The six oil wells brought in this week had a total initial production of 520 barrels, averaging 86.7 barrels per well. Last week, five oil wells brought in 495 barrels of new production, with a per-well average of 99.0 barrels.

New Work in Lincoln County

Stimulated by success of operators in the Stroud field, Lincoln county is being given a thorough testing, wells now going down in all directions from the field proper. Among recent locations and new wells starting up in Lincoln county, the Prairie Oil & Gas Co. is rigging up its No. 1 Massey, in the SEc NW¼ of 9-14-6, two and one half miles west of Stroud field.

Magnolia Petroleum Co. and Pure Oil Co. have a rotary rig up for a test on the Bray farm, in the NWc SW¼ SE¼ of 18-14-5, a quarter-mile southeast of the same interests 12 million foot

Oklahoma and Kansas Estimated Daily Average Production

Oklahoma	Mar. 22	Mar. 15
Bristow	45,580	46,225
Burbank	96,800	91,920
Cushing	22,865	22,900
Healdton	16,685	16,770
Hewitt	21,220	21,540
Tonkawa	36,450	37,675
Osage, except Burbank	32,430	32,700
Wewoka	9,540	10,245
Oklahoma, general	110,980	108,520
Total	392,550	388,495
Increase		4,055

Kansas	Mar. 22	Mar. 15
Augusta-Douglass	3,690	3,735
Blankenship District	2,935	2,960
Elbing-Peabody	7,930	7,950
Eldorado	16,520	16,330
Florence District	3,700	3,710
Fox-Bush	4,135	4,180
Greenwood County	20,980	20,225
Leon & Weaver	1,110	1,235
Kansas, general	11,325	11,125
Total	72,325	71,450
Increase		875

gas well. These companies also have a standard rig up for their No. 1 Ross, in the SEc SW¼ of 7-14-5, about a half mile north of the gas well.

In this township, Morgan & Fylnn are drilling below 1650 feet in their No. 1 Hopkins, in the SEc of 2-14-5. Northwest of Stroud about six miles, Independent Oil & Gas Co. is drilling at 450 feet in its No. 1 Earp, located in the NE¼ SE¼ of 6-15-6. Morgan & Flynn are rigging up their No. 1 Sporelder, in the SWc SE¼ of 34-15-5, southwest of the Stroud field.

Union Petroleum & Supply Co., which drilled the discovery well in the Stroud field, has blocked about 1500 acres in the southwestern part of township 15-5 and the southeastern portion of 15-4.

Jefferson County Wildcat Producing

In Jefferson county, southern Oklahoma, the Clark & Cowden No. 1 Spring, in the CEL NW¼ NW¼ of 25-6S-6W, is reported to be producing at the rate of 190 barrels daily. This well is five feet in sand topped at 2095 feet.

In Love county, another southern Oklahoma wildcat that has been drilling a long time is again showing signs of making a well. This is the No. 1 Draughon, of the Westheimer & Daube interests, and is located in the SW¼ SW¼ of 27-6S-2E. This well is reported to have swabbed 50 barrels of 38 gravity oil in 24 hours when a fishing job intervened, due to a lost bailer. The oil sand was found from 2190 to 3208 feet. The hole is standing with about 1800 feet of water in it, presumably coming from a water sand at about 2500 feet, and efforts will be made to lower the 6⅝-inch casing to shut this water off. This test was taken over by Westheimer & Daube from the Union Petroleum & Supply Co., which gave it up as a bad job.

Cromwell Pool

In the Cromwell pool, Seminole county, the T. B. Hoffer et al well in the southeast of the northeast of 16-10-8 is now making 1900 barrels. The McMan Oil & Gas Co.'s No. 1 King, in the southwest corner of the northwest of Sec. 22 is making 1500 barrels after being deepened 3 feet to a total depth of 3457 feet. Shaffer Oil & Refining Co.'s No. 1 Johnson, in the southwest corner of the northwest of the northeast of Sec. 10, north of the Cromwell field proper, is reported to be making 60 million feet of gas at a total depth of 2738 feet.

Cromwell's No. 1 Bruner discovery well was deepened one foot late last week to 3494 feet but did not increase its production which is around 250 barrels daily.

Drilling Operations, Oklahoma, Kansas and North Texas March 22

	March 15 Week Ending					March 22				
	Loc.	Rigs	Drg.	S.D.	Total	Loc.	Rigs	Drg.	S.D.	Total
OKLAHOMA										
Burbank	10	7	182	11	210	10	7	182	11	210
Other Osage	23	20	108	9	160	23	20	108	9	160
Bristow-Cushing	11	22	99	33	165	28	13	103	31	175
North Oklahoma	7	11	46	51	115	7	12	39	54	112
South Oklahoma	6	30	206	81	323	16	27	227	93	363
Muskogee	..	13	52	36	101	...	14	48	39	101
Okmulgee-Bristow	2	78	97	39	216	2	79	102	45	228
Tonkawa	2	3	69	5	79	...	4	54	9	67
Wewoka	11	18	86	13	128	9	38	101	12	160
Total Oklahoma	72	202	945	278	1,497	95	214	964	303	1,576
KANSAS	29	87	97	61	274	26	79	103	62	270
NORTH TEXAS										
Eastland County		1	31	5	37	...	6	31	7	44
Stephens County		35	34	20	89	...	36	36	20	92
Texas Panhandle		5	21	9	35	...	5	21	9	35
Mexia (Powell)		1	22	10	33	...	22	21	5	48
E. Texas Wildcats		10	16	29	55	...	7	15	36	58
W. Texas Wildcats		68	207	90	365	...	68	203	87	358
Total N. Texas		120	331	163	614	...	144	327	164	635
GRAND TOTAL	101	409	1,373	502	2,385	121	437	1,394	529	2,481

Completions In Oklahoma And Kansas Week Ended March 22, 1924

OKLAHOMA

Beckham County

Company	Well No.	Description	Depth	Initial Production
Carter Oil Co	2	NW NE 31-9E-23W	3956–3963	300

Carter County

Amster	3	SE NE 25-2S-3W	2575–2610	4M
Cameron Ref. Co	5	SW SE 30-2S-2W	2485–2490	475
Skelly Oil Co	10	SW NE 21-4S-2W	3021–3024	120
Humble Oil Co	2	SE SE 22-2S-3W	T.D.1939	Dry

Creek County

Pure Oil Co	4	NW NE 17-15N-8E	3726–3780	300
Prairie O. & G. Co	4	30-14-8E	3379–3406	775
Margay Oil Co	1	CNL NE 14-14N-8E	3626–3670	135
Mattox & Kenney	2	SW NE 15-19N-9E	2754–2756	65
Shaffer O. & G. Co	1	NE SW 15-19N-9E	2768–2775	38

Grant County

Western States	4	NE SW 22-27N-3W	T.D.2765	Dry

Kay County

Globe O. & R. Co	1	SEc 8-27N-1W	3478–3488	13M
Prairie O. & G. Co	1	33-28-5E	T.D.3305	Dry
Prairie O. & G. Co	2	33-28-5E	T.D.1450	Dry
Mid State Pet. Co	1	SWc SE 8-28N-2E	T.D.3665	Dry
Amerada	1	NEc SE 32-27N-1W	T.D.4007	Dry

Lincoln County

Magnolia Pet. Co	1	SE NW 18-14N-5E	2591–2598	11M

McIntosh County

H. R. Lee	1	NE NW 13-12N-17E	T.D.2300	Dry

Noble County

Gypsy Oil Co	69	SE NW 2-24-1W	1823–1885	150
Comar Oil Co	8-B	NE SW 2-24-1W	1824–1860	360
Comar Oil Co	9-B	CEL NE 2-24-1W	1824–1860	175
Comar Oil Co	11-A	SW NE 2-24-1W	2195–2212	368
Comar Oil Co	12-A	SW NE 2-24-1W	1822–1840	186
Healdton O. & G. Co	14	W½ NW 11-24-1W	2596–2600	165

Okfuskee County

Waite Phillips et al	3	SE NW 12-11-11E	2792–2802	12M

Okmulgee County

Sheridan Oil Co	6	SW SW 22-16-12E	2537–2549	400
Pulaski Oil Co	2	SE SW 22-16-12E	2538–2544 O.W.D.	650
John Botts	3	SW SE 32-15-11E	2506–2532	30
Wood Oil Co	1	SWc SE 14-13-11E	2480–2488	400
Salter et al	8	SE SW 21-13-12E	2181–2195	30
Mitchell Oil Co	4	SE NW 30-12-12E	2397–2402	130
LeBean et al	5	NW SE 22-15-11E	T.D.2452	Dry
Gladys Belle Oil Co	6	SE NE 36-13-11E	T.D.2547	Dry
Henry Oil Co	1	SE SE 10-12-11E	T.D.2675	Dry
Black Pet. Co	17	SWc 34-12-12E	T.D.2750	Dry
Thompson	9	SE SE 6-13-14E	1255–1275	10
Lundy	6	SW NW 23-13-14E	1730–1754	60
O. A. Baker	1	NE SW 21-14-13E	1991–1999	30
Elm	11	SE SW 13-14-14E	1061–1108	10
A. W. Cline	1	NEc NW 14-15-13E	T.D.2467	Dry
Hennessey	1	S½ SW 8-15-14E	T.D.1760	Dry
Vensell et al	7	NE SW 18-15-14E	T.D.1826	Dry

Pawnee County

Watchorn O. & G. Co	1	SWc NE 33-23-3E	2740–2755	150
Mutual Oil Co	2	NE SE 25-20-9E	T.D.2716	Dry
Prairie O. & G. Co	5	15-20-6E	T.D.2834	2M

Seminole County

Dixie	4	SW SW 28-8-8E	3098–3118	1600

Stephens County

Midland Oil Co	1	SE NW 11-1N-5W	1065–1070	35

Tulsa County

Sand Springs Home	1	NW SE 6-19-12E	2095–2105	1600
Murphy et al	6	NE SW 13-18-12E	723–759	10

Wagoner County

Van Secklen	3	SEc NE 16-17-16E	783–795	10
Peer Oil Co	4	NW SE 1-17-17E	153–173	40
O. A. Sewell	2	SW NE 15-17-16E	T.D.832	Dry
Knox & Newton	2	NE SW 16-17-16E	T.D.1000	Dry
Wagoner	3	NE SE 16-17-16E	T.D.868	Dry

KANSAS

Elk County

Ohio Fuel Oil Co	2	CNE SE 28-29-9E	1522–1540	10M
Deidrick et al	2	CSE NW 34-29-9E	1486–1504	9M
Ohio Fuel Oil Co	1	CSE NW 13-30-8E	1640–1652	6M
Laskey & Rhodes	1	NWc SE 21-30-11E	1222–2157	15
Deidrick et al	1	SEc 21-30-9E	T.D.2462	Dry

Greenwood County

Rodgers et al	3	NW NE 31-22-10E	2428–2472	40
Mid Kansas	2	CEL NE 31-23-10E	2282–2340	90
Rodgers et al	5	NWc NE 14-24-9E	2144–2182	75
McGinnis et al	4	SE NW 24-24-9E	2132–2172	175
Roth & Mission	3-B	NE SW 22-23-10E	T.D.2050	Dry

Lyon County

A. M. Buck et al	1	SE NW 34-21-10E	T.D.2245	Dry

Marion County

Sheedy et al	1	NW NW 33-21-5E	T.D.2397	Dry

Osage County

Rodgers-Brown	1	NEc SW 15-16-16E	T.D.1510	Dry
Foster Oil Co	1	NEc SE 8-16-17E	T.D.1595	Dry

Rice County

Hipple et al	1	SW NW 35-20-6W	3396–3406	140

Greatest Wildcat Play Since Ranger Days Hits Northeast Texas

By Paul Wagner

STAFF REFRESENTATIVE

HOUSTON, March 22. UP AND down a series of subsidiary fractures in the Balcones fault zone, northeast of Powell, one of the greatest 'wildcat' plays in the oil history of the southwest is taking form.

Not since the days of Ranger, when the whole of Texas was regarded as potential oil territory, has there been such a scurry for leaseholds. There is this difference in the northeast Texas region, however, that only acreage in close proximity to known or hypothetical faulting is considered.

The present play, which in relation to total acreage held takes the form of the acquisition of leaseholds rather than actual drilling development, has as a background the history of Powell and Mexia. Roughly a dozen test holes, however, are going ahead in northern Navarro, Rains, Kaufman, Van Zandt, Hunt and Hopkins counties. Others are about to be started, depending upon drilling obligations and still others will await the outcome of operations that go ahead in the meantime.

In general, blocking of acreage is along the contact of the lowermost Eocene members with the Cretaceous, which latterly mentioned geological division reaches the surface west of Mexia and Powell, in Limestone and Navarro counties, respectively, continuing northeasterly through Kaufman, Hunt and Hopkins counties, where it turns almost easterly into Franklin and Titus counties.

Geology Delimits Leasing

Beyond the surface contact of the Cretaceous with the later formations, no blocking of acreage to the westward or northward in these counties is being done. Easterly, in parts of Navarro, Henderson, Van Zandt, Wood, Rains and Hopkins counties, the play is being made in areas surfaced by the Wilcox formation of Eocene age. In a narrow strip, where the Midway outcrops west of the Wilcox and east of the Cretaceous prairie, the play also is going ahead.

In some of these counties, from six to a dozen test holes have been drilled as failures, either as a result of the old Caddo, La. development or because of the "wildcatting" that followed upon the discovery of the Mexia field, in Limestone county, scarcely more than three years ago.

Although previously productive in northern Louisiana, where it is the principal source of petroleum in the Caddo field, the Woodbine sand, which is the objective of northeast Texas tests had never been exploited in the Lone Star state until Mexia came in. There, as later in the Currie-Wortham development and at Powell, the accumulation was found to result from a structural condition brought about by faulting upthrown against an impervious barrier at the level of the Woodbine sand, found variously from the 2800-foot to the 3100-foot level in the several fields mentioned.

The faulting responsible for these accumulations was responsible also for the deposits taking the form of long and narrow pools. Mexia being only about a mile wide at its broadest point and Powell scarcely 4000 feet in breadth at any place, generally much narrower. Thus, it appears, that 'wildcat' failures do not necessarily condemn great areas in the Woodbine sand belt of the Balcones fault zone, especially if surface conditions are such as to leave doubt as to the location of a test with reference to the subsidiary fractures calculated to produce.

Old Tests Guide New

The foregoing conditions in mind, it is apparent then that the failures recorded in one or more of the counties now being tested for production did not necessarily condemn the area northeasterly from Mexia and Powell in the direction of Sulphur Springs, Hopkins county, and beyond. Rather these tests made possible the carrying ahead of the present wildcatting program with a lesser degree of gamble because the information gained in earlier test drilling is available as a guide against further operations.

Where test holes that were failures found the Austin chalk marker formation high in contrast with other operations a few miles away, it has been possible to trace within a reasonable factor of error the underground position of the series of faulting both at that level and at the underlying Woodbine horizon. The application of simple rules of engineering plus geology makes certain phases of this work more or less simple after enough drilling has been done to create bases of information from which to work.

All companies leasing in this general area operate largely upon geological advice, whether the information utilized comes from such a source as the foregoing or from the surface indications, or, as in the case of the Marland Oil Co. of Texas, the use of shallow test holes to the top of the Midway lime which were used as a base for correlations. In addition to shallow well drilling, the Marland interests also used the German "seismos" instrument in attempting to outline sub-surface structure by measuring the wave length of detonations in relation thereto.

Patterson Lakes Development

About three miles north of the Seay-Cranfill gas development, in the northern part of the Currie-Wortham district, two small wells have been completed recently in the Patterson Lake area, northeast of the town of Richland, Navarro county.

These two wells, both completed by McDonald Brothers, local interests of Corsicana, have been making about 250 barrels together from the 3065 foot level as compared with the regular pay in the Powell field, four miles northeasterly, at 2950 feet. No. 1 Brown, however, is again flowing around 300 barrels daily after running in packer and tubing.

No. 1 Brown, the original well in the Patterson Lake district, came in for approximately 300 barrels, initial daily production. No. 1 Swink, the second well, was good for about 75 barrels daily at first. Both are in the John White (upper) survey, on and around which about a dozen other tests are now being drilled.

Sun Oil Co. is making one test on the Brown tract in the Patterson Lake district; Boyd Oil Corp. under which name Col. A. E. Humphreys and associates now operate, is making one on the Allison tract; Godley Oil Co. is drilling on the Allison and other smaller interests are represented, including the Providence Petroleum Co., and Gutman Bros.

Boyd Oil Corp. is reported to have paid $200 an acre for a 30 acre tract north of The Texas Co.'s Swink lease, offsetting the northeast corner of the latter with a location. Simms Oil Co. paid $250 cash and $200 out of the oil to be produced for 30 acres constituting the C. A. Gordon lease, in the John White survey.

Boyd Tests Basette Block

In northeastern Navarro county, beyond Powell, the Boyd Oil Corp's. block of acreage now under test begins at the town of Basette and runs almost directly east to the Trinity river, which it crosses. This block continues into Henderson county, where about 650 acres have been leased out of the L. Johnston and Amanda M. Carroll surveys.

On the Navarro county side, the Boyd Oil Corp. has a location on the T. L. James tract and in the same vicinity the Mutual Oil Co. is getting

ready to drill on the C. W. Nowlin lease, Seay & Cranfill recently drilled a failure in the Basette area that cored a showing of oil in the Woodbine, but not in commercial quantity. This test will be a guide to further wildcatting in this part of Navarro county.

Prairie Oil & Gas Co., which is taking protection in scattered areas northeast of Powell, is represented in the Basette section with two tracts, one of 35 and the other of 60 acres, near the south Boyd block.

Henderson County Tests

Two test wells are being drilled near the town of Chandler, in the western part of Henderson county, which ties in between Navarro on the southwest and Van Zandt and Kaufman on the north. The Hodges et al. No. 1 Cade, in the J. B. Dorsey survey, had a fishing job at 2610 feet and the Richardson et al No. 1 Cade, in the E. C. Southerland survey, was shut down temporarily at 200 feet.

The Mutual Secured Oil Association of California has again started up No. 1 Browning and is drilling at 3122 feet at Murchison, in the E. Rice survey. Fred Haynes et al are planning to drill in the H. Jeffreys survey, on the Ed. G. Bounds lease.

Van Zandt County

In Van Zandt county, the Prairie Oil & Gas Co. is the only interest engaged in leasing activities at the present time. It is taking protection around the block of the Marland Oil Co. of Texas, which previously took up thousands of acres from a point northeast of Prairieville, Kaufman county, in a northeastely direction past Wills Point across Van Zandt and into Rains and Hopkins counties. Marland acreage, originally taken in the name of the Alcorn Oil Co., now is being transferred to its new subsidiary, the Marland Oil Co. of Texas.

The Marland interests have traded acre for acre with the Atlantic Oil Producing Co., and Dodwell et al, giving eight scatteredd tracts out of the Van Zandt county block for leases in the Navarro county block of the Boyd Oil Corp., around which latter acreage has been held at about $60.

Two drilling contracts have been made by Marland, one in Hopkins county and the other in Rains. The Hopkins location is in the M. Hamilton survey, on the Cooper farm. 3600 feet north and 150 feet west of the southeast corner, in Rains county, No. 1 King in the N. G. Crittenden survey, is 1500 feet east and 600 feet south of the northwest corner of the tract.

Hopkins County Leasing

Marland has leased from Houghland Bros. approximately 4500 acres extending from the west city limits of Sulphur Springs, Hopkins County, to take in the greater part of the Lovick P. Dikes survey. The Texas Co. also got from Houghland Bros. a block that takes in parts of the John Norris, John Clark and Henry Quirks surveys.

Skelly Oil Co. is reported without confirmation to be taking over the G. J. Smith block in the H. Morgan, S. Tunnage and A. Caro surveys. Under the name of the New Unity Oil Co., interests identified with the U. S. Texas Oil Corp., (Frankel Brothers of New York City) are blocking up acreage north of Weaver and extending from the J. Hawkins survey half way to Sulphur Bluff. These interests are also taking acreage in Franklin county, which constitutes an extension to that part of their blocking which reaches to the east line of Hopkins county in the vicinity of Sulphur Bluff.

In Franklin and Hopkins counties through Titus and possibly as far as Morris, which adjoins Titus on the east, a total of nearly 75,000 acres is reported to have been taken since the first of the month by the interests identified with the U. S. Texas Oil Corp., the Gulf Production Co., and others.

Near the town of Weaver, northeastern Hopkins county, Kleinsmith et al, blocked 5500 acres and southwest of Sulphur Bluff. I. P. LaRue et al took up leaseholds covering in its entirety the Alex O. Wetmore survey and part of the J. E. Hopkins, James Clark, W. M. King and the north part of the Daniel Fuller surveys.

The Texas Co. contracted with Kleinsmith and Taylor for 3000 acres in this part of Hopkins county and purchases of about 500 acres each are reported to have been made by the Humble Oil & Refining Co., and by L. P. Garrett, formerly chief geologist of the Gulf Production Co.

Gulf Plays "Interior" Faults

Gulf Production Co. has 9000 acres it is credited with plans for early testing to the north of the fault that is being played by The Texas Co. and others. The Gulf is buying only on what is known as the "interior" fauls as distinguished from the "exterior" faulting that runs more or less parallel to the latter series of fracturing but to the south-southeast.

On the so-called "interior" faulting, the Gulf has a total of four blocks, one in the north end of Kaufman county, two in Hunt county and one in Hopkins, besides scattered stuff such as acreage checkerboarded with others in the John Abels survey, southeast of Elmo, Kaufman county, and elsewhere.

Records of Old Work

As an index to earlier testing in Hopkins county, the No. 1 Mitchell well of the Cousin Hall Oil Co., due east of Sulphur Springs, was an old failure at 3392 feet. Almost due north of this well and nearly to the Delta county line was drilled the No. 1 Davis of the Panhandle Oil & Refining Co., which joined the list of failures at 3506 feet.

The Panhandle well is northwest of the hereinbefore mentioned La Rue block and is due west of a block being formed by the Roxana Petroleum Corp., subsidiary of the Shell-Union Oil Corp., and arm in America of the Royal Dutch-Shell interests. The Roxana block is between the LaRue acreage and the 2710 foot old failure of Smith et al, immediately southeast of Sulphur Bluff. The Nos. 1, 2, and 3 failures of Witherspoon et al which surround Sulphur Bluff and the Roxana acreage were not deep enough to test the Woodbine but throw light on geological conditions.

The New Unity block is southeast of the LaRue. Due north of Sulphur Springs and similarly north of the town of Posey, the Smiddy test of the National Oil Co., drilled several years ago, was a failure at 3436 feet.

Kaufman County Conditions

In Kaufman county, where 15 to 20 earlier tests were drilled at points unfavorably located with regard to faulting, the Humble Oil & Refining Co. is expected this spring to make one or more tests on a block of acreage taken over last fall from the U. S. Texas Oil Corp. interests, which is commonly known as the Prairieville structure. The hypothetical course of the fault in this area is described as taking a southwesterly direction from a point approximately 1000 feet northwest of the town of Prairieville.

Boyd Oil Corp. is testing a location on the B. T. Rand farm, on the Rierson survey and is also buying royalty under the B. H. Wittaker farm, in the Timothy Devore survey. Pure Oil Co. has leased 50 acres out of the Ed Legg tract, near the southwest corner of the Boyd block. Around "interior" faults in Kaufman county, the Pure bought scattered leases in the J. E. Roof, John Abels and T. Stokely serveys.

Gulf Production Co., Humble Oil & Refining Co., The Texas Co., Boyd Oil Corp. and the Southern Exploration Co., besides others, are the principal holders of acreage and royalties in the John Abels survey. Near the old Roscoe well, on the C. Pearson survey, about three miles southeast of the town of Kemp, where Jackson et al are working over the test, both the Sun Oil Co. and the Atlantic Oil Producing Co., hold several tracts.

Pure Buys Into Block

Pure Oil Co. is reported to have paid $15,000 for a half interest in the Alexander, Skinner & Kelsey block of 3500 acres, in northeastern Kaufman county. This block extends across into Hunt county and includes the extensive J. C. Barrows tract. In this connection, an old test of the Humphreys Oil Co., before it was taken over by the Pure, was drilled to 3542 feet on the J. C. Barrow tract before it was abandoned. This northeast Kaufman county test was at surface elevation of 573 feet and found the Austin chalk marker formation at 2536-2860 feet.

In eastern Hunt county, where the Gulf Production Co. has two large blocks, old tests are of value in checking formations. Southeast of the James Cole survey, on the J. C. Harris 213-

acres, a 3515-foot failure with surface elevation of 437 feet had the top of the chalk at 2105 feet and the bottom of the chalk at 2535 feet. This is southeast of one of the Gulf blocks and west of the town of Live Oak.

Due west of the Harris, the Sowell Bros. test in the James Hamilton survey, was drilled to 3255 feet. It had the chalk at 1885-2195 feet and reported a show of oil that did not reach commercial quantities at 3223-3255 feet. Between the Amos Smith survey and the town of Live Oak, the Hogcreek Carruth old test topped the chalk at 1947 feet and was a failure at 3405 feet.

Pettit Gets Gas Show

Charles Pettit et al, drilling 2000 feet north and east of the southeast corner of the James Cole survey, on the Cooper tract, two miles north of the town of Campbell and southwest of Commerce, topped the chalk at 2060 feet and was last reported drilling around 2500 feet. This test had a small show of gas in the Blossom sand.

Southwest of Quinlan, in Hunt county, the Meia-Kaufman old test on the Dennis went to total depth of 3350 feet in the Jose Santos survey. It had chalk at 1806-2330 feet and the Woodbine sand was dry at 2950-2970 feet.

Southeast of Quinlan and across the Van Zandt county line, the Fensland Oil Co.'s old Alvarado test was abandoned around 2700 feet.

Due north of the town of Live Oak and east of the Gulf block that runs northeast from the town of Dixon, being east of the Gulf acreage, the J. K. Hughes Developing Co.'s old Wooldridge test, elevation 490 feet, had top of the chalk at 2230 and bottom of this formation at 2635 feet, proving a failure at total depth of 3120 feet.

Play Reaches Titus County

In Titus county, the second geographical sub-division east of Hopkins and except for Morris the easternmost county in the group herein dealt with, the Humble Oil & Refining Co. is blocking up acreage in the northeast corner. The John Tumlinson, John H. & Joseph Keith, Frank Onis, M. E. Price and Abram Doughty surveys are included.

From the town of Talco to the John Tumlinson survey, various companies are active. These include the Magnolia Petroleum Co., which has taken up about 9000 acres along White Oak Creek in the B. B. B. & C. railroad survey.

Shallow Well In Puente Hills Is Making Heavy Fluid

By Special Correspondent

LOS ANGELES, March 21

DEVELOPMENT of a small pumper 20 miles east of Los Angeles was the feature of California petroleum developments during the past week. This well is the Bardeen No. 1 of the Bardeen Oil Co., in the Puente Hills. It was placed on production from the 1970-foot level after being drilled 4100 feet deep. It is yielding about 200 barrels of 20 degree gravity oil per day, of which about 20 per cent is emulsion.

The hole was plugged back to 1970 feet after the company had repeatedly failed to get a water shut-off. The hole has been in process of drilling for between 2 and 3 years. It is asserted that the company passed up two or three small sands on the way to the 4100-foot level. Geologists are of the opinion that the hole is in a sand which is lenticular, and not so extensive as a true sand.

The Bardeen company has not yet decided as to whether it will drill more wells there. It owns 1100 acres of land in one block there. The St. Helens Petroleum Co., operating half a mile northeast of the Bardeen pumper, is pulling casing in preparation for the abandonment of its hole. The Eskridge & Craise Oil Co. is drilling ahead at 1540 feet a mile and a half east of the Bardeen hole.

Another development of secondary interest, which may hold much for the future was the discovery made in the Newport Beach district, south of Huntington Beach, a few days ago, by the Long Beach Consolidated Oil Co. The drillers struck a live sand at 3675 feet, which corresponds to the middle sand in the Huntington Beach field, a few miles to the north.

This Newport sand is said to cut 31 degrees gravity. The hole is now down 4200 feet. The company is trying to locate a sand which corresponds to that from which production is obtained in Huntington Beach at a depth between 4600 and 5000 feet. The water is now being shut off just below the first live sand. It was learned yesterday that the company which made the strike is heavily leased up in the vicinity of the well. Operators think that if this well is successfully brought in the Huntington Beach field will be extended all the way to Newport Beach, a distance of about 6 miles. The new well is located inland from the beach about one mile.

The Rideout Heights district, at the northwest city limits of Whittier, where the Whitley Oil & Refining Co. got a gusher just before Christmas, is enjoying marked development progress at this time. J. E. O'Donnell, who owns about 300 acres of leases along the Rideout Hills, has leased a number of strips of the land to the Petroleum Midway Company, Ltd., operating subsidiary of the California Petroleum Corp., and the Petroleum Midway outfit has already started rigging up four wells. Three are to be drilled on the hillside, and one will be sunk on the very peak of the dome, on a lease which belongs to Petroleum Midway. It is understood that the latter has made a deal with O'Donnell to drill three leases on a fifty-fifty basis. The Standard Oil Co., of California is milking along on its Patten No. 1, a quarter of a mile south of the Whitley No. 6, which blew in barefooted three months ago. There are now nine rigs on the Rideout Hills.

California Daily Production

	Mar. 22	Mar. 15
Santa Fe Springs...	90,000	98,000
Long Beach	211,000	214,000
Huntington Beach..	57,000	57,000
Torrance	33,000	28,000
Dominguez	2,900	2,800
Rest of State	248,000	242,000
Total	641,900	641,800

Over at El Segundo, where the Pan-American Petroleum hit an oil sand two months ago in a wildcat hole it is still fishing for tubing which was lost when it finished a cement job. More than 1000 feet of tubing was twisted off in the hole, and the crew has put in a busy month with it. All but about 40 feet has been removed from the hole, reports said yesterday, and the drillers think that the job will be finished within 20 days, after which they will resume drilling into the sand. The Fortuna Oil Co., drilling near by, is down a little over 3750 feet, without particularly good indications, it is asserted.

At Orange the Orange Community Oil Association which late last year drilled a wildcat hole to a depth of about 4400 feet on a community lease of about 400 acres consisting of pooled ranch property, has worked out a plan for financing the drilling of another test in the same locality. The unit holders have agreed to stand an assessment of from $25 to $50 each, and the association expects to put that money with $15,000 credit on the old drilling contract and pay for a new hole which is to be spotted by its geologist at some date in the near future. This test will not be a great way from several other wildcats which are being drilled in the Anaheim-Orange territory at present. At least two big companies are prospecting in that area.

During the week just closed the Los Angeles basin fields completed 20 new producers, of which Torrance claimed 12, Long Beach, 1, Santa Fe Springs, 6, and Huntington Beach, 1. The Torrance wells were noteworthy for the reason that they were of better size than usual. The production range for the 12 was from 250 barrels up to 1400 barrels. There were only three in the lower class, while 9 ranged upward from 500 to 1400 barrels. Long Beach did its worst for the year with a lone producer worth 800 barrels daily.

Powell's "Surprise High Spot" Shows B. S. In All Deep Wells

By Paul Wagner

STAFF REPRESENTATIVE

HOUSTON, March 21

VIRTUALLY all wells on the "high spot" in the southern part of the Powell field where flush production has resulted from deeper drilling the last few weeks are making large quantities of b. s. and water, or both.

A check of production from these wells in the last 24 hours shows the following:

Elliott, Sparkman & Mauldin, No. 1 Hill, making 1500 barrels daily, 18 per cent b s.

Elliott, Sparkman & Mauldin, No. 2 Hill, dead.

Hamilton, Hoosier & Thompson, No. 1 Hill, 7000 barrels, 30 per cent b. s.

Stroube & Stroube, No. 1 Hill, 130 barrels per hour, 5 per cent b. s., 8 per cent water.

Stroube & Stroube, No. 2 Hill, 275 barrels per hour, 23 per cent b. s., 1 per cent water.

Humble Oil & Refining Co., No 3 Hill, 150 barrels per hour, 17 per cent b. s.

Mills Bennett, No. 1 Woolens, 7000 barrels, 8 per cent b. s.

Farrish, Watts & Collins, A-3 Cerf, 125 barrels per hour, 24 per cent b. s.

As previously reported in NATIONAL PETROLEUM NEWS, all the wells on this "high spot," are either on the Hill tract, where the surface rights are owned by the Humble Oil & Refining Co. as a tank farm, or in a few cases the wells are immediately adjacent thereto on offsetting leases.

About the first of March, when these wells first began coming in for flush flows because of deepening 40 to 50 feet below the original producing level in the Woodbine sand, it was believed on the basis of the nominal knowledge of conditions that this lower pay might be more extensive areally than the small spot, or "high place," now productive.

Since that time, and on the basis of greater knowledge of underground conditions, it is generally conceded that only a limited area may be expected to produce; this flush oil probably being confined to an area only five or six locations square and under water conditions similar to those set forth in the preceding paragraphs.

Condition of Old Development

Elsewhere in the Powell field, at the original Woodbine sand producing level, production conditions are indicated by an accompanying table that shows per well averages by leases and companies.

On the Crews lease of the Gulf Production Co., where a relatively large per well average production is shown in comparison with other Powell properties, compressed air is being used to recover the oil. When the air was put on the wells, production was increased 3000 to 4000 barrels total for the lease, daily, to roundly 9000 barrels.

On the Lovett (also mapped as Crews), the Tidal Oil Co.'s No. 1 well was increased from 300 to 1200 barrels when the air was used. The Tidal also tried "long-stroke" pumping on some of its wells to improve production averages but is said to have found that in the Powell field the results obtained were not sufficiently better, at least insofar as its properties were concerned, to justify the increased cost.

McMan Oil & Gas Co., however, found on its Chapman leases that by using long stroke pumping and 4-inch tubing that it increased its maximum pumping recovery from individual wells from 300 to 900 barrels daily. This condition is not apparent for the properties as a whole, however, as will be seen from reference to the accompanying table.

Roxana Petroleum Corp. shows a per well average of 326 barrels for its McKie "A" lease, a relatively phenomenal recovery, as a result of tubing the wells. Its A-5 McKie, on an 8-day test after tubing with 3-inch, showed an average increase of 55 barrels recovery. It was then that decision was made to similarly equip other wells on the property.

Tidal Recoveries Phenomenal

Tidal Oil Co., which is following out a policy of storing its oil against the future rather than selling or transporting it through other outlets, having no Powell pipe line of its own, has had the most consistent large acreage recovery perhaps of any operating interest in the field.

The Ramsey "A" lease of the Tidal, on which eight wells were drilled, had averaged 41,000 barrels to the acre re-

POWELL FIELD PER WELL AVERAGES; COMPANIES AND LEASES

Company—Farm	Number of Wells	March 15 Daily Per Well Avg.
Atlantic Oil Producing Co.		
Irvine "B"	13	123
Kellum	11	327
Cunningham	1	463
Barclay & Meadows		
Cerf	3	82
Corsicana Oil & Refining Co.		
J. O. Burke	1	15
Kenner	2	5
Springfield	2	23
Cosden Oil & Gas Co.		
Springfield	2	125
Elliott et al.		
Hill	2	150
Derby Petroleum Co.		
Harvard	1	25
Farrish, Watts & Collins		
Cerf	3	130
T. & B. V. R. R.	2	240
Galloway Oil Co.		
Gentry	3	267
Gulf Production Co.		
Barron	7	63
Blumrosen	4	32
Bush	3	117
Christian	6	54
Crews	18	501
Gentry	7	70
McKie	1	124
Smith	6	35
Sprinkle	8	156
Witherspoon	8	20
Hoosier & Thompson		
Hill	1	16,703
J. K. Hughes Developing Co.		
Alexander	7	214
McKie	13	20
Humble Oil & Refining Co.		
All leases	182	150
Pure Oil Co.		
Fair	1	20
Kent 10-acres	3	12
Kent 44-acres	8	11
McKie	62	173
Humphreys & King		
Springfield	1	35
Hunter et al		
Christian	3	33
Garland Kent		
Fleming	10	133
Kirby Petroleum Co.		
Brown	6	70
Fleming	2	68
McKie	3	273
McMan Oil & Gas Co.		
(Chapman (Anderson Sur.)	7	126
Chapman (Broyles Sur.)	11	101
Witherspoon	1	180
Mills Bennett		
Woolens	1	30
(This well increased several thousand barrels by deeper drilling)		
Mitchell & Jones		
J. O. Burke	2	125
New Domain Oil & Gas Co.		
Kent	6	23
Roxana Petroleum Corp.		
Blumrosen	4	35
McKie	8	36
McKie "A"	8	326
Simms Oil Co.		
Blumrosen	2	70
H. B. Boyd	4	578
R. H. Boyd	2	1,289
J. A. Boyd	3	9
Kellum	4	128
Rose	8	234
E. L. Smith Oil Co.		
Cerf	2	155
Scott & Bower		
Springfield	1	200
Skelly Oil Co.		
Carroll	8	123
Gentry	1	20
Ramsey	4	28
Stroube & Stroube		
Hill	2	6,366
T. & B. V. Railroad		
Right-of-way	2	225
The Texas Co.		
Fleming	12	217
Texas & Magnolia Partnership		
Kent	17	106
McKie	8	46
Sun Oil Co.		
Barron	1	15
Kent	4	170
Springfield	1	25
J. L. Thompson		
Christian	2	0
Springfield	1	0
H. H. Cross Refining Co.		
Humphreys	1	100
Tidal Oil Co.		
Bressie	1	410
Ballard	2	40
Lovett	7	142
Cerf	8	163
Phillips	11	147
Ramsey "A"	10	185
Ramsey "B"	7	20
Ramsey "C"	6	63
Thompson	3	10
Wheelock	9	426
Upchurch et al (Now Pure)		
Fleming	1	1,015
U. S. Texas Oil Corp.		
Burke	4	89
Ramsey	4	21
Webster & Pickens		
Burke	1	85
Witherspoon Oil Co.		
Burke	9	182
Yoder et al		
Harvard	1	70
655 wells Averaging 212 barrels daily		

covery, March 1. At that time it was still making 1650 barrels daily and March 15 it had a per well average production of 185 barrels. Its "B" lease had recovered 15,000 barrels per acre and was making combined production of 175 barrels from seven wells, March 1.

An "edge" lease of the Tidal on the Thompson had given up only 1600 barrels per acre, and March 15 the three wells were averaging 10 barrels each.

On the Lovett (Crews), the Tidal, March 15, was getting 142 barrels, per well average, from seven wells. The lease as a whole was making 850 barrels daily, March 1, after recovering 34,000 barrels an acre prior to that date. Its Phillips, on which the per well average is now more than 145 barrels from 11 wells, was making a total of roundly 1600 barrels, March 1, and had recovered prior to that time 23,000 barrels per acre.

Because of the quantities of Powell crude in storage and to provide an outlet both for this and other oil held by the Humble Oil & Refining Co., the Humble Pipe Line Co. is now engaged in "looping" with an additional 6-inch line its transportation system south of Hearne.

The connecting point of the Humble's east Texas outlet with its Ranger to the Gulf pipe line system is at Hearne. From the latter point southward, the Humble originally had an 8-inch line which was looped with 6-inch after Mexia came in. Later, its east Texas facilities were extended to Powell with great tank farm facilities both there and in the Mexia district, the latter at Groesbeck.

The 8-inch, as originally looped, gave the Humble facilities for moving 30,000 barrels daily southward from Hearne; a part of this system being required to handle runs moved from the Ranger territory through the original 8-inch. Now, with an additional 6-inch loop southward from Hearne the Humble will be in position to move 40,000 barrels daily.

SHREVEPORT, March 21.—Daily average production in the north Louisiana and Arkansas districts, comprising the Shreveport territory, during the week just closed totaled 167,497 barrels, compared with 171,452 barrels the week before, a decline of 3955 barrels. By districts the daily average in north Louisiana and Arkansas during the weeks ended March 20 and March 13 follows:

Daily average	Mar. 20	Mar. 13
Caddo, light	8,215	8,385
Caddo, heavy	2,050	1,995
Red River-DeSoto	6,295	6,215
Haynesville	18,590	19,155
Homer	8,295	8,275
Bellevue	5,400	5,100
El Dorado	13,196	13,415
Smackover	103,045	106,519
Stephens	2,411	2,450
Total	167,497	171,452
Decrease	3,955	

"Dry" Gasser In Cotton Valley Pool Is Now Spraying Oil

By Special Correspondent

SHREVEPORT, March 20

DECLINES both in daily average and initial production were recorded in the Shreveport territory, including Arkansas districts, during the week just closed. The daily average production totaled 167,497 barrels, a decrease of 3955 barrels. The initial yield totaled 4880 barrels from 30 producers, compared with 7070 barrels from 27 producers the preceding week. There also were two failures and three gassers the week just closed, against seven failures and three gassers the preceding week.

The third producer in the Cotton Valley district of Webster parish was recorded, being the Ohio Oil Co.'s Hodges No. 2 in 15-21-10, which came in two weeks ago making 20 million cubic feet of dry gas and disappointing many who believed in the future of that field. During the past week this well was opened through two small chokes and is now listed as making 15 barrels of oil as a spray, the showing being one of the feature developments of the week. The daily production of the Merritt wells of the Fortuna Oil Co. and the Louisiana Oil Refining Corp., the two other producing wells of that district, continues to increase; the latter well is now flowing around 500 barrels or more through two small chokes, and the Fortuna well is making in excess of 100 barrels daily.

In the Smackover district, Hollyfield and associates' Giller No. 5 in 11-16-15, as reported in last week's issue of NATIONAL PETROLEUM NEWS, at 2280 feet extended the deep gas strata approximately two and one-fourth miles eastward. The well is making around 40 million cubic feet of dry gas.

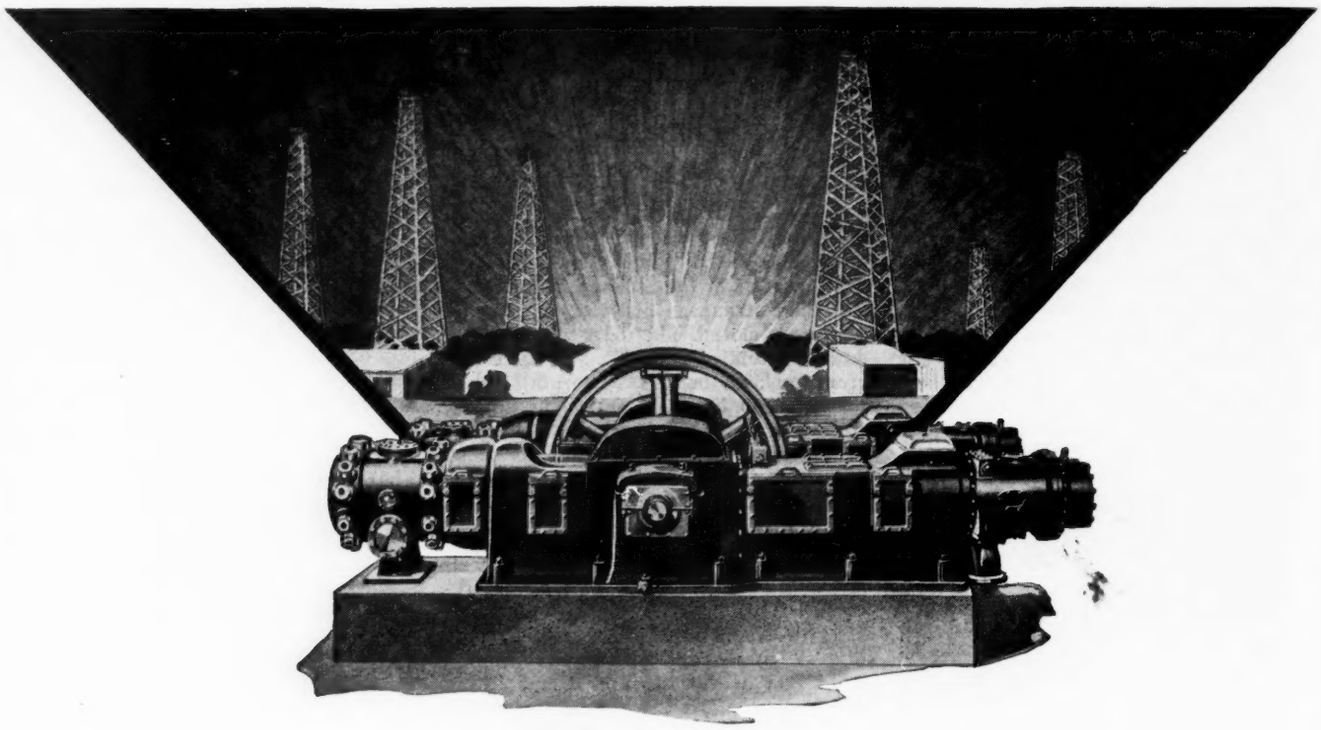
The El Dorado, Arkansas, east field came back into the production column after a long absence with a 150-barrel producing well, the Smith No. 4 of Terry Summerfield in 29-17-14, at 2210 feet.

Hoffer Owns The Pool

TULSA, March 21.—In a letter to NATIONAL PETROLEUM NEWS, T. B. Hoffer, president of the Fensland Oil Co., calls attention to the correct ownership of the Cromwell pool, Seminole county. Reports had credited a big well completed there to the Fensland Oil Co. and the Gessel Drilling Co. Mr. Hoffer says the Fensland has no interest in the property which is owned and operated by himself and associates of Fort Worth. He adds that it is contemplated to liquidate the Fensland company some time in the near future.

Completions in North Louisiana and Arkansas, Week Ended Mar. 20

Company	Well	Location	Depth	Yield
LOUISIANA				
Webster Parish—Cotton Valley				
Ohio Oil Co.	Hodges No. 2	15-20-10	2521	25 m. gas 15 bbls. oil
Lincoln Parish				
Tarver et al.	Payne No. 1	20-21-1W	3000	S. W. aband.
Bossier Parish—Bellevue				
Humble Oil & Ref. Corp.	B. & W. A.—10	10-19-10	405	10
R. O. Roy	Scanland No. 31	15-19-11	370	50
R. O. Roy	Scanland No. 32	15-19-11	365	50
Morehouse—Union				
Union Power Co.	U. S. M. Co. A-9	31-21-4E	2150	25 m. gas
Union Power Co.	U. S. M. Co. A-12	1-20-3E	2155	30 m. gas
ARKANSAS				
Stephens				
Hoffman et al.	Buffington No. 3	24-15-20	2120	15
Smitherman & McDonald	Womack A-1	10-14-21	1350	dry aband.
Gulf Refining Co.	Buffington No. 1	24-15-20	2165	25
El Dorado—East Field				
Terry Summerfield	Smith No. 4	29-17-14	2210	150
Smackover				
Estes et al.	Freeman No. 1	1-16-17	2260	35
Estes et al.	McGraw No. 2	1-16-17	2260	35
Stewart et al.	T. C. Goodwin No. 1	21-16-15	2075	1600
Standard Oil Co.	Alphin No. 1	11-16-15	2005	250
Roxana Petroleum Co.	J. K. Murphy No. 2	15-16-15	2015	60
Natural Gas & Petroleum Co.	J. Murphy No. 2	17-16-15	2115	300
Lyell et al.	Fee No. 1	3-16-15	1995	350
Hollyfield et al.	Giller No. 5	11-16-15	2280	40 m. gas
O. W. Clark	Berry No. 3	24-15-17	2295	170
Klotch & Thomas	Peace No. 3	26-15-17	2350	50
Louann Oil Trust Co.	Smith No. 3	36-15-17	2298	55
W. J. Mangis	Fee No. 2	24-15-17	2324	125
Forrest Oil Co.	Minor No. 3	29-15-16	2285	600
Keen & Woolf	Solmson No. 6	32-15-16	2250	40
Penguin Oil Co.	Hardin No. 2	27-15-16	2010	20
Roxana Petroleum Co.	Snyder No. 1	34-15-15	1965	15
Smith Refining Co.	W. F. Patton No. 5	31-15-16	2255	25
Texas Oil Co.	Solmson A-7	29-15-16	2282	150
Wortham & Orr	Saxon No. 1	32-15-16	2270	30
Gulf Refining Co.	W. F. Patton A-2	31-15-16	2260	150
Gulf Refining Co.	Solmson No. 4	29-15-16	2294	175
Gulf Refining Co.	L. Werner S. M. Co. No. 14	32-15-16	2260	100
Gulf Refining Co.	E. T. Jamison No. 3	21-16-15	2075	50
Gulf Refining Co.	Lecroy No. 2	16-16-15	2101	180



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Third Sand Well In Salt Creek Is Good Producer; Colorado Boom Approaches

BY Special Correspondent

DENVER, March 22

THE outstanding features in the news of the Rocky Mountain district for the week include the following:

Additional completions in the third Wall Creek sand in Salt Creek indicating the productive area for this sand to be larger than supposed;

A pronounced increase in activities in the new Colorado fields which point to wildcat operations on an unusually large scale;

Discouraging reports from the northwestern New Mexico;

A significant showing in a wildcat in southeastern Utah;

Preparations for an extensive spring drilling campaign in Wyoming and Montana; and,

The commencement of crude oil runs through the new Sinclair pipe line to the eastern markets.

The third sand operations in Salt Creek are, undoubtedly, of economic value but appears to be productive only in the southern part of the field and on Teapot dome. The last completion in that sand was made this week by the Ohio Oil Co. on the SE¼ of SW¼ of 17-39-78 in its No. 1-G which topped the third sand at 2840 feet. Last reports from the field say it is flowing at the rate of 250 barrels a day. It found the second Wall creek, which was topped at 2608 feet, to be barren all the way through the 60 feet of sand.

About two weeks ago the Ohio drilled into the third sand on the SE ¼ of NW¼ of 20-39-78 at 2820 feet and stopped after drilling in 11 feet. It looked as if the well would make a good producer and was shot. It swabbed about 18 barrels and then went dry and proved a disappointment. This well is about one mile south of the new producer on Section 17.

A mile to the south of the Ohio well on 20-39-78, the Mammoth Oil Co. found water in the third sand and also encountered water 200 feet below the second sand on 21-39-78. Still farther to the south and east, on SE¼ of 33-39-78, the Mammoth cut the third sand at 3100 feet and went into it 7 feet with indications that it might be a good producer, when the company suspended operations in the field. The Mammoth had intended to carry these wells on down as deeper tests.

The Kasoming Oil Co., for the Producers & Refiners Corp., drilled its Bywater No. 12 on 22-39-78 3 feet into the third sand the past week at 2831 feet at which depth it was making 5 to 6 barrels an hour. On the west, the E. T. Williams secured a good pumper in the third sand on the SW¼ of 11-39-79 several years ago.

The result of these drillings indicate that approximately two square miles of territory looks favorable for commercial production from the new sand. Just what it will amount to in the long run remains to be seen but that it is an important development is generally admitted.

CASPER, March 22.—Average daily pipe line runs in the various fields in the Rocky Mountain region for the week ended March 22 showed an increase of 3535 barrels, the record for the week being 130,165 barrels as compared with 126,630 barrels for the preceding week. Comparative daily runs for the weeks ended March 22 and March 15 follow:

Fields	Mar. 22	Mar. 15
Salt Creek	101,625	97,800
Teapot	3,290	3,700
Big Muddy	3,715	3,800
Grass Creek	2,950	3,000
Elk Basin	1,375	1,450
Greybull, etc.	120	135
Rock River	3,560	3,625
Lance Creek	1,950	2,000
Poison Spider	220	225
Osage	615	630
Hamilton Dome	600	515
Lander	385	375
Pilot Butte	80	90
Lost Soldier	3,850	3,500
Ferris	135	150
Cat Creek	4,475	4,525
Kevin-Sunburst	530	360
Miscellaneous	690	750
Totals	130,165	126,630

The "spotted" character of the sand has, however, been shown by drilling to date.

Colorado is leisurely taking on the aspects of a real oil boom. New companies are being formed at the rate of two or three a day; large operators from the Mid-continent, Texas and California fields are coming into the state; deals in leases and acreage are on the increase; and new wells are being started on a number of structures. The Standard Oil Co. of California, the Marland Oil Co., the Empire Gas & Fuel Co., the Danciger Oil & Refining Co., and the Sinclair interests, are among the new comers while the Midwest Refining, Ohio Oil, Texas, Union Oil of California, Producers & Refiners, Continental and others already located in the district are more or less active in every part of the state. The number of geologists in Denver, Fort Collins, Craig and other points waiting for the snow to go off, indicates that other large operators whose identity has not been disclosed, are also seeking a foothold.

The bigger companies are going slow in making field examinations on account of the ground being covered with snow to such an extent as to prohibit detailed examinations. Some of the geologists coming in from Texas and California are not keenly anxious to work in the field under these conditions. For example, the head geologist for one of the largest companies in California made the trip from that state to Denver and then out to Craig. When he alighted from the train and saw the immense banks of snow, he caught the next train back to Denver where he decided to wait for a change.

The Union Oil Co. of California has its four wells in the north central part of the state. two on the Wellington, one on the Fort Collins and one on the Douglas lake structures, under way. Nothing definite from any of them is expected for some time though the Fort Collins well may yield results sooner than expected. This well, 7 miles south of the discovery well on the Wellington dome, showed considerable gas and oil in the Mesa Verde, which was passed through at somewhere around 1355 feet. That indicates that the next sand will be found at approximately 1000 feet shallower than in the discovery well, which came in at 4280 feet, though the Fort Collins dome was generally considered to be much deeper drilling.

Union officials do not definitely accept the conclusion of most of the geologists for other companies to the effect that the oil and gas at Wellington is coming from the Muddy sand in the Dakota series and still believe that the producing horizon is the Wall Creek. This leads to a significant development. The company has derricks up on all four of its new operations in that district and it was given out that this constituted its drilling program until some of the wells were completed. However, it has purchased an extra heavy steel derrick 122 feet high, doubly reinforced and with a crown block capable of standing a pull of 1,250,000 pounds, which is being shipped to Wellington. Unofficial reports say that a location has been made on the SW¼ of 7-9-68 and orders given for work to begin on the foundation. It looks very much as if the company is going to start a test that will definitely solve the question of the deep sands by putting down a hole that can go through all the formations to be found under 6000 feet.

Would Drill Edges First

Union officials have given out the information that the Colorado operation is going to be made second only to its operations in its home state, California, and that it will search for new structures in every part of the state that

offers favorable prospects. The company is endeavoring to form community associations of holders of royalty interests in the lands it is drilling in the Fort Collins-Wellington district so the three structures may be drilled from the edges towards the center. The purpose is to save the gas on the top of the structures to lift the oil to the surface which can not be so satisfactorily done if it is tied up with drilling contracts that require wells on top.

The Ohio Oil Co. is about ready to commence drilling on the Haystack structure in Boulder county, near the town of Niwot. The location is on 28-2n-70 and 50 miles south of the Wellington operation and 24 miles north of Denver. It has 4500 acres on the structure but will not be alone in that field. The Sand Hills Oil Co. has a rig going up and rig irons on the way for a well on the same section three-fourths of a mile away and the Rainbow Oil & Development Co. has a rig up on the Bolton ranch on the same structure.

The Midwest Refining Co. is exercising its options in the vicinity of Berthoud, just about midway between the Ohio Oil Co. operation at Niwot and the Fort Collins development. More than 1500 acres have so far been recorded in the name of an officer of the company.

The American Petroleum Co., and associates, have made a location on 29-10-68, Wellington dome; Union Oil Co. of Colorado, is rigged and ready to spud on 6-9-68; and the Mid-Way Oil & Gas Co. has contracted for a well on 31-9-68, which makes four companies operating on that structure to date.

At least one well between Boulder and Denver is scheduled for this spring and another 15 miles north of the city is almost a certainty so it looks as if there will be strings of tools working almost from the city limits of Denver to the northern boundary of the state.

Northwestern Colorado development is being held back by the road and weather conditions. The Texas Production Co. is ready to move supplies for four new wells on the Craig dome (heretofore referred to as the Hamilton dome) as soon as roads are passable. The locations are, lot 8, 28-5-91; middle of 33-5-91; NE¼ of NE¼ of 16-4-91; and on 9-4-91.

The only operation outside of that of the Texas company on the Craig dome definitely announced is that of the Hamilton-Salt Creek Oil Co. on NW¼ of NE¼ of 28-5-91, one mile north of the discovery well. Midwest Refining Co. has two operations definitely planned in that district, one on the Iles dome, 5 miles southwest of the Craig structure and the other on the Hiawatha dome on the Colorado-Wyoming boundary. The Hillman-Goebel Co. is resuming operations on the Morgan dome 30 miles west of Craig. Standard Oil Co. of California has field men in the district as have also a score of other companies. Mine cars with oil men in them coming down from Wyoming were blockaded by snow and only three succeeded in getting to Craig.

Northwest New Mexico

A representative of one of the larger companies said this week that "it looks as if the Dakota sand in northwestern New Mexico has blown up." While there is much to what he says, it probably is only half true. The Rattlesnake dome well drilled by the Producers & Refiners for the Santa Fe Oil Co. is shut in. Reports on the well vary. Officially it is stated to be good for 10 to 20 barrels as it stands, to have flowed for only five minutes, and to be in danger of water encroachment. Reports to a high railroad official, on the other hand, say it is good for 200 barrels of 64.2 gravity oil. In any event, nothing more is likely to be known about the importance of the discovery until other wells are drilled. The rig has been moved 1500 feet to the east and 600 feet to the south and another well started.

Outside of the Rattlesnake dome, the Hogback remains the only proven structure. The Midwest Refining Co., which is in charge of that operation, is now investigating the feasibility of piping the Hogback crude to Farmington, 15 miles away, putting up a small topping plant, and furnishing gasoline to the local territory. It had previously made surveys for a pipe line to either Albuquerque or Gallup but, apparently, it is convinced that the production available will not warrant this larger undertaking at this time.

Southeast Utah Test

The outlook in southeastern Utah is more encouraging as a result of a showing on the Boundary Butte structure, near the Arizona boundary, in the Southwest Oil Co. test. It picked up a sand at 1565 feet where none was expected and where there is no geological reason for the presence of oil. About 13 to 20 barrels of oil is standing in the hole. The oil is coming from a horizon considerably above the first sand in the Pennsylvania series and is very encouraging for finding production in that series expected at 3400 to 4000 feet. The Southwest is a subsidiary of the Midwest Oil Co. Mutual Oil Co. has a financial interest in the test which will prove its acreage on the structure.

The Texas Production Co. wildcat in Wayne county, central Utah, begins to look like a failure. It is 15 feet in a sand at 1875 feet with nothing showing, but is being deepened.

Gustaveson Oil Co. has a 10-barrel pumper at 552 feet in the Virgin field, Washington county, southwestern Utah. It recently acquired some leases in that field upon which were two wells drilled to a shallow depth several years ago. They were cleaned and put on the pump and are rated good for 15 barrels for both wells. The third well was then drilled and came in as a producer.

Little New in Wyoming

Wyoming shows mostly routine operations. The Mammoth Oil Co. is shut down on Teapot dome except for the operation of producing wells. The Carter Oil Co. deep test to the Dakota series on the Billy Creek structure in Johnson county, is drilling at 4205 feet in the shale and no indications as to how far it must go to strike the Muddy which was expected at 4175 to 4200 feet. A test is scheduled this spring for the Burris dome, sometimes called the North Salt Creek extension, at the southern end of Johnson county and north of Salt Creek. Pacific coast interests will do the drilling. The Tarrant syndicate found water in the first Wall Creek sand at 2340 feet on the Steel Creek structure 10 miles south of Billy Creek in Johnston county. The Utah Oil Refining Co. is starting a second well on the Black Mountain structure, Hot Springs county, near Thermopolis, where it brought in a 150-barrel well making black oil last fall in the pioneer operation. The Marine Oil Co. is reported preparing to abandon its second deep test on the Sheldon dome, near Maverick Springs, Fremont county, at 3435 feet and the Midwest Refining Co. is temporarily abandoning its test on the North Casper Creek structure.

Abandons South Dakota Test

South Dakota is not showing much interest in oil this season. Mutual Oil Co. has abandoned its test near Hot Springs in that state which was a small operation expected to pick up production at 800 feet but quit at 1015 feet without finding anything.

The Sinclair Pipe Line Co. commenced running crude from its Clayton tank farm through the new line to Freeport, Mo., on March 12. It will take several weeks to fill the line for the entire 720 miles and to begin deliveries. This will be the first oil ever transported out of Wyoming by pipe line.

Completions Rocky Mountain District Week Ending March 15

Company	Well No.	Description	Depth	Production
WYOMING				
Salt Creek				
Ohio Oil Co.	1-G	17-39-78	2840	250
Kasoming Oil Co.	Bywater 12	22-39-78	2831	Not tested
E. T. Williams Oil	16-A	19-40-78	2300	2000
Mountain & Gulf	33-A	6-39-78	2132	To be shot
Steel Creek				
Tarrant Oil Syndicate	1	Johnson Co.	2340	W. To be deepened
SOUTH DAKOTA				
Mutual Oil Co.	1	15-6s-6e	1015	Aband.
UTAH				
Gustaveson Oil Co.	3	Virgin field	552	10
MONTANA				
Murray Bros.	1	13-2-22	1460	Gas

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Heavy Snow Hampers Texas Work; Deep Well In Clay County

By Special Correspondent.

FORT WORTH, March 22

NORTH Texas fields experienced the most severe weather of the winter this past week, all records of snowfall for this time of year being broken in Wichita and Archer counties, and on through to the Panhandle.

The most sensational result was the loss of the Panhandle's first big well, The Texas Co.'s 1000-barrel producer on the Burnett. The loss was only temporary however, caused by the unusually high temperature at which the oil commenced congealing, 58 degrees. The well had been flowing when the cold spell came. Operations of all kinds have been hampered by the cold weather and the heavy snow, but recovery of normal was already in sight by the end of the week.

Wichita and Archer counties had three important district extensions during the week. A mile north of the old deep K. M. A. pool the No. 1 Kemp and Allen of John O'Donohoe picked up an 1100-foot sand, which will make a nice producer. It is some distance from production at this approximate depth, and a mile from any production.

East of the newly opened Shappell, or Murphy's Corner pool in the south part of Wichita county, Simms et al have the 1800-foot sand with indications for a good producer. This well, the No. 1 Dutton is about a mile and a half from the 1800 foot wells of the Shappell pool.

The third extension was in North Archer county, the Pace et al No. 1 White, showing for a 300 to 400 barrel producer, being some distance to the east of production.

Deep Clay County Well

Clay county apparently has a second deep producer in the No. 1 Meyers of the Nebraska-Texas Oil Co., known as the Blue Grove well, from its location near the town of Blue Grove. The depth is given as 3345, with casing about 36 feet off the bottom of the hole. Estimates on production run from 100 to 150 barrels, though some who have visited the hole express the belief that it will prove a better producer than indicated by the present showing. The well has 2750 feet of oil in the hole, and has sprayed oil after the bailer a number of times.

The Gulf Production Co.'s No. 1 Worsham, about half way across Clay county, in a northeasterly direction from the Nebraska--Texas, was the first deep producer in Clay county. The two wells are apparently in the same pay formation, with slight difference in depth. The No. 2 Worsham of the Gulf has been abandoned, while the No. 3 is not considered as having much chance to make a producer. Both are north of the No. 1, which after a year's time is producing around 75 barrels daily.

Interest in Montague county has received some stimulation from the strike in Jefferson county, Oklahoma, across Red River from the Nocona gas field, in the No. 1 Spring of Cowden et al 2090 feet. Estimates from the field after the first pump test placed the production anywhere from 100 to 200 barrels. Leasing is reported active around the new well, which is a genuine wildcat, there being no production other than the Nocona gas wells, for miles and miles. All the south part of Jefferson county, Oklahoma, is reported coming in for a play.

The south end of the district shows little activity. The Panhandle's No. 1 Gray-Hightower, in the new Eastland semi-shallow area, is the only completion of any size reported since last week. This well is making 100 barrels, from the 1200-foot sand.

The Crockett county wildcat, the No. 1 Shannon of the Crockett Drilling Syndicate, was reported to have a showing of both gas and oil in a gray sandy lime at 2365 feet. This test, south of the Geagan county producers, is on the Sheffield Terrace, and its location has been passed upon favorably by several competent geologists, so that the progress and results are being watched with more than ordinary interest. The owners do not expect the present showing to make production, the 3000-foot level being sought particularly.

Texas Daily Production

	Mar. 22	Mar. 15
Mexia-Currie	35,900	36,200
Corsicana-Powell..	132,500	139,000
Wichita Falls Dist...	67,480	70,630
Ranger Lime	34,775	35,790
Ranger Sand, inc. Young and Shackleford Counties	10,460	10,385
San Antonio Luling and Mirando	24,300	23,000
Coastal Texas	79,745	82,205
Coastal Louisiana...	6,095	5,995
Total	391,255	403,205

Completions North-Central Texas, Week Ending March 22, 1924

WICHITA FALLS DISTRICT

Wichita County

Company	Well No.	Lease	Depth	Production
E. M Fouch	1	Jennings	1460	125
Texhoma Oil & Refining	2	Burnett et al-B	1825	20
Scott Bower	1	Munger	2000	Aband.
Rio Bravo Oil Co	9	Fee-A	1665	25
Bailey & Wiley	1	Buerbaum	2000	Aband.
Sooner Oil Association	9	Roberts	1040	Aband.
Magnolia Petroleum	67	Gladiolus-Burnett	2200	Aband.
Magnolia Petroleum	22	Hortoin-Walker	1170	15
Maer, Staniforth & Willis	1	Kemp	1850	Aband.
Magnolia Petroleum	7	Heiserman	1100	10
Camp Oil & Gas Co	7	L. P. Douglas-B	1930	400

Archer County—north

The Texas Co	8	W. F. Parrish	1590	80
The Texas Co	3-A	W. F. Parrish	1600	500
Texhoma Oil & Refining	3	Wilson-B	1600	480
Texhoma Oil & Refining	4	Wilson-B	1600	625
Empire Gas & Fuel	2	Wilson-C	1615	310
Empire Gas & Fuel	5	Wilson-B	1590	160
McCarty Oil Co	14	Wilson	1590	100
Scott & Gose	4	Mrs. J. E. Parrish	1590	60
Peyton Gwynne	12	Carter	1580	110
Peyton Gwynne	5	Wilson-Blk 6	1600	520
Kentucky Oil Corp	10	Wilson	1590	315
Kentucky Oil Corp	11	Wilson	1595	225
Riner & Bailey	3	Wilson-B	1620	150
Hawkins & Hester	3	Carter Bros	1380	40
R. M. F. Oil Co	13	Wilson-D	1600	130
R. M. F. Oil Co	14	Wilson-D	1390	110
W. S. Langford	6	Kemp & Kempner	1615	Aband.
Mutual Oil Co	7	Wilson	1590	560
Mutual Oil Co	8	Wilson	1585	765
Texhoma Oil & Refining	1	Sterrett	1850	Aband.
G. C. Wood	2	Wilson	1600	80
Verschoyle et al	2	Wilson-B	1390	80

Archer County—south

Swastika Oil Syndicate	2	Goldsmith	1320	140
Danciger et al	1	D. R. Maxwell	1750	Aband.
Shamrock Oil Co	3	Richardson-B	1425	Aband.
Shamrock Oil Co	4	W. Harbison	1330	325

Clay County

Seaboard Oil & Gas	1	Zihlman	2000	Aband.

GENERAL RANGER TERRITORY

Young County

Mid Kansas Oil & Gas	1	Moran	3300	Aband.

Palo Pinto County

Upham Gas Co	4	Watson	3740	3 m. gas

Eastland County

Panhandle Refining Co	13	Hightower	1200	100

Stephens County

Royal Palm Oil Co	1	Newnham	3260	junked
Pender Prod. Co	2	Davis	3230	50 bbls., shot 30 qts.

Brown County

Canyon Oil & Gas	6	MacDonough	1145	3 m. gas

Powell Completions

Mills Bennett	1	Woolens	2992	15,000
Skelly Oil Co	4	Ramsey	1610	80
Elliott et al	1	Hill	2985	100
J. K. Hughes Dev. Co	6	Alexander	3010	(drilled deeper) 6000 bbls., 30½ b. s. and w. drilled deeper
Humble Oil & Refining	7	Cerf-A	3000	300 (drilled deeper)
Humble Oil & Refining	3	Hill	2992	4000
Humble Oil & Refining	1	Hill	3010	550

OIL FIELD SUPPLY TRADE NEWS

Pipe Business Keeps Mills Busy; Plate Demand Rather Slow

By Special Correspondent

PITTSBURGH, March 25

DEFINITE inquiries for line pipe installations by oil companies are in the minority, there being a decided avoidance of definite action, traceable in part no doubt to the interference by the investigating committee at Washington.

That this should long serve as a brake upon the industry, however, is doubted by the trade and a revival is expected before many weeks.

Nothing new has developed regarding the 715-mile line for the McCorkle Pipe Line Co., for Oklahoma-Texas installation. Some of the Independent group of tubular goods manufacturers expect that this will "peter out;" others expect that some time during 1924 this as well as other 400 or 500-mile installations will be made both in the south and west. In the meantime, the influx of orders from jobbers keeps up remarkably well, since they as yet have not had much opportunity to dispose of some of the stocks they have accumulated. Orders usually involve one to five carloads at a time.

Occasionally an inquiry develops for 10 or 12 carloads but orders of that size are a rarity at the present time. Drilling in certain sections is proceeding along fairly active lines in order to hold leases and, too, line wells are being drilled in some of the quarter-sections in Oklahoma, all of which is of interest to the pipe producer since each well means on the average four carloads of tubular goods, such as drill pipe, casing, surface pipe, etc.

The pipe mills of the country are well satisfied with the way business is developing. They are operating on a 90 to 100 per cent basis and have work on hand for four to six weeks to come—in some cases for longer periods. The demand for standard full weight merchant pipe used in building construction is uninterrupted and this helps out the butt-weld mills.

The Republic Iron & Steel Co., Youngstown, O., is adding a new butt-weld mill to bring its total to four butt-weld and three lapweld. The lapweld mills are kept busy meeting the demands from the oil country. The cards of last April still apply.

If the plate and other forms of finished steel were as active as is pipe, there would be no complaints heard anywhere in the steel business. As it is, in the absence of oil storage tank business of size, the plate mills have to depend upon the car business being placed for their tonnage to schedule the mills.

This has been fairly heavy of late, including a large number of tank cars, so that many plate mills are being operated at 90 per cent of capacity. This is true of the Carnegie Steel Co., and one or two of the independents. The Skelly Oil Co., Tulsa, has ordered 35 insulated 8050-gallon tank cars from the Standard Tank Car Co., Sharon, Pa. The Standard Oil Co., of New Jersey is in the market for about 4000 tons of plates, and the Standard of Ohio, also is seeking a smaller tonnage for the same purpose. The Utah Oil Refining Co., has ordered 10 stills from the Petroleum Iron Works Co., requiring only about 200 tons of plates but the Atlantic Refining Co., Philadelphia, has placed an order for a gasholder with the Chicago Bridge & Iron Works, involving 900 tons and has bought five large stills from Vogt & Sons, Louisville, Ky., calling for the use of about 500 tons of plates.

Most of the tonnage wanted by the Standard Oil Co., of New Jersey referred to above will be two inches thick and more than 100 inches wide. These plates take a $10 per ton extra for quality in addition to the regular extra for width and will inspire keen competition, although only a few mills of the country can roll that width and thickness.

Prices on plates are weak, some attractive orders placed in the east having developed 2.20 cents a pound and 2.25 cents, Pittsburgh. The regular market is quotable at 2.40 to 2.50 cents base Pittsburgh.

Another source of plate business is the barge requirements. The Inland Waterways Co., Louisville, Ky., is taking bids on the construction of six oil-carrying barges to ply the Ohio river to Pittsburgh. They are to be of all-steel construction with a capacity of 500 tons each. That company now is operating the steamers Plymouth and Margaret in the Pittsburgh and Louisville trade, towing oil and manufactured steel material.

The Asiatic Petroleum Co., Bergen Point, Bayonne, N. J., has had plans perfected by the Moody Engineering Co., 90 West St. New York, for a 1-story power house to cost $25,000.

In addition to its proposed oil storage and distributing plant in the Shipyard Creek district, Charleston, S. C., the Gulf Refining Co. plans the erection of a car repair shop, a machine shop, a power house, pumping plant, barrel shop, cooper shop and automobile service building, for which a list of machinery will shortly be issued. The plant will cost approximately $800,000 with equipment.

A portion of the storage and distributing plant of the Humble Oil & Refining Co., Groesbeck, Tex., was destroyed March 8, entailing a loss of about $75,000 to buildings and equipment. It will be rebuilt. The company's headquarters are at Houston, Tex.

Builds Laboratory To Test Oil Field Tools

HOUSTON, March 25.—The Hughes Tool Co. has under construction a modern engineering laboratory that will be devoted to improvement of materials and equipment for oil field work.

The building will be of saw-tooth construction, 60 by 100 feet, and supplied with electric lines, high pressure air, steam, fuel oil and water. An electric evaporator will be installed for the production of distilled water. The chemical laboratory will be planned especially for metallurgical work and, in addition to regular analytical equipment, will be provided with photomicrographic equipment for the examination of metal structure.

The physical laboratory will be equipped with the latest testing machines for determining physical constants of material, with special emphasis on impact and fatigue tests, and wear tests, as these factors are of prime importance in oil field equipment. Measuring instruments also form an important group in this department. In addition to the standard micrometers and gages, a set of standards, accurate to five millionths of an inch, will be maintained for basic reference and an optical machine will be used for gage work.

A small but complete hydraulic installation will be made to secure such data as may be required for designing equipment for unusual service. Included in this installation will be a special machine with which deep well bits may be tried out on various formations above ground and their performance noted. This machine has been in operation for the past three years, and has yielded valuable information. Several improvements will be made in this equipment when it is moved to its location in the new building.

Shows Need Of Outside Crude Supplies

WASHINGTON, March 24—Six and a half barrels of crude oil was the per capita measure of consumption in the United States last year while 15 years ago it was two barrels, according to a statement that has been submitted to the secretary of the interior by George Otis Smith, director of the Geological Survey, on the oil situation in the United States at the present time.

In urging that the American commercial and industrial interests take immediate steps to protect themselves from an ultimate oil shortage, Director Smith called attention to a statement he made four years ago that necessary provision for an additional supply of crude oil outside of the territory of the United States was imperative. The director also elicited the fact that the Geological Survey as early as 1908 brought to the attention of the secretary of the interior the government's future needs for liquid fuel for naval use. His statement follows:

"Six and a half barrels of crude oil is the per capita measure of consumption in the United States last year. Fifteen years ago it was two barrels. It is true that both figures include the petroleum exported as refinery products, but these exports represented a larger part of the total in 1908 than now, so that the purely domestic demand for the oil that comes from United States wells has increased more than three-fold in this period.

"In 1908 when the director of the Geological Survey brought to the attention of the secretary of the interior the government's future needs for liquid fuel for naval use, the output of the oil wells was only a quarter of what it was last year. A dozen years later, the director urged that the future of American commercial and industrial interests be protected by making the necessary provision for a supply of crude oil outside the United States. He suggested that if, happily, the geologists' estimates of reserves in the United States proved too low, the consumption rate would surely be raised by this unpredicted abundance.

"Since the war, when there was such a demand put on our oil industry for petroleum products, the production has again doubled. Nor has consumption failed to keep pace with this unexpected flood of oil. Since President Taft inaugurated the withdrawal policy, gasoline production has jumped from half a billion gallons a year to seven and a half billion, as reported by the Bureau of Mines, and the production and consumption of fuel and gas oils and lubricants also show large increases, especially in the past few years.

"If in the chronology of industry the 10 years, 1910-20, was called the petroleum decade, it remains to be seen what more emphatic term will be applied to the present decade. Already the peace demand for petroleum products has far overtopped the war peak and industry's increasing need of oil continues. The earlier record was taken as justifying Federal action and these later developments, it is believed, fully warrant deliberate attention to the oil problem of today. No short-sighted policy in oil can serve this nation in its increasing dependence on petroleum."

Will Not Urge Inquiry Into Red River Affair

By Special Correspondent

WASHINGTON, March 22.—Ineffective efforts are being made in Senate circles looking to the repeal of the Watson Act of March 4, 1923, conferring certain oil rights to claimants of government oil reserves in the bed of the Red River constituting the Texas-Oklahoma boundary.

Senator Fletcher of Florida has urged the Senate oil investigating committee to recommend repeal of the law which the Department of Justice declares has the effect of turning back to claimants several millions of dollars now in the hands of a receiver appointed by the United States Supreme Court to act for the government and to permit the leasing of tracts the titles to which are cloudy.

Since further investigation into the matter, Senator Fletcher has applied the "soft pedal" and now asserts that he will not press for an official inquiry by the Senate committee. In introducing a bill providing for the repeal of the law, which has been pending for some months, Senator Fletcher explained that he did so for the purpose of calling the matter to the attention of the Senate and House public lands committee.

The Watson law was jammed through Congress during the close of a busy session without much debate. Senator Fletcher recently conceived the idea that the bill was given only slight consideration in committee and this week he asked the Senate oil investigating committee to recommend repeal of the law so as to protect the government's interests. Upon making further inquiries, he learned that both committees held extensive hearings on the Watson bill and for that reason, he later explained that he was content to leave the question of its repeal to the committee without seeking to intervere any further in the matter.

Secretary of the Interior Work reported to the Senate that 160 applicants have filed for leases under the Watson act but the department has made no awards. Refraining from making any direct recommendation for the repeal of the law, Secretary Work said that was a matter for Congress itself to decide. He has asked, however, that Congress consider the question of enacting further legislation for the development of the fields or else direct that the area be administered under the general leasing act of 1920.

Those in close touch with the Senate oil investigating committee say there is no likelihood of the committee going into the question of the Red River oil reserves at all. It is a matter that Congress already has acted upon and clearly outside the scope of the committee's inquiry into the Sinclair and Doheny leases. Nor is there much probability, it is said, of the House reopening the question at this time.

Smackover, Ark., Field Goes Southward To Norphlet

Staff Special

HOUSTON, March 21.—The completion of a 1200 barrel well on the Norphlet townsite, southeastern part of the Smackover, Ark. field, calls attention to the fact that on the south and east the productive limits of the possible oil producing area have not been defined. The proved area of the Smackover field is approximately 42 square miles.

Along the eastern part of the defined area there exists a strip approximately a mile wide where no drilling has been done to delimit production. Dry holes do exist a mile to a mile and a half away, however, that would appear to make certain that the field will not extend a greater distance to the east and southeast at the 2000-2100 foot pay level.

Norphlet, to which production was extended by the No. 1 Goodwin well of Lonnie Stewart et al, was originally considered a gas territory, but more recently oil development had extended almost to the townsite on the north and northeast. The Stewart well was completed at 2080 feet.

In sec. 11-16-15, two and a half miles east of the previous eastern limit of the deep gas sand in the Norphlet district, the No. 5 Giller of Hollifield et al is a gasser at approximately 2280 feet.

Approximately 170 wells are drilling in the Smackover territory, there are about 75 location and rigs up and about 50 days drilling time is required to complete tests. The average initial production of recent wells has been around 150 barrels daily and the per well average production of earlier completions has been around 90 barrels.

TULSA, March 21.—Wood & Wood, consulting geologists, who formerly were domiciled in the Daniels building here, have moved their offices to the Commercial building, 4th and Boulder.

Gulf Coastal, Texas Completions Week Ended March 22, 1924

Company	Lease—Well	Field	Depth	Production
Gulf Production Co.	Thomas Fee 1	Hull	2950	150
Humble Oil & Refining Co.	Marshall 5	Hull	865	75
Republic Production Co.	Dolbear 79	Hull	2620	250
Orange Petroleum Co.	Chesson 4	Orange	3590	50
Brownie-Babbette Oil Co.	McLain 8	Orange	4100	40 10½ BS
Gulf Coast Oil Corp.	Gaillard 31	Goose Creek	2880	65
Gulf Production Co.	H. Busch 1	Goose Creek		Aband.
Gulf Production Co.	Tarver-Hardin 56	Sour Lake	2025	50
Mutual Oil Co.	Wiems 1	Blue Ridge	4600	Aband.

This California Drilling Crew made 1000 Ft. with a Hughes 18" Simplex Rock Bit

This photograh was taken at The Shell Company of California's well, La Merced G A, Montebello, California; Geo. Nelson, driller, is shown standing at the left in the picture.

At the time this picture was taken they were drilling at a depth of 3775 feet, and had just completed a 55 ft. run through hard formation with the 10½" Hughes Simplex rock bit shown in the picture. The set of cones on the bit made all this footage and was good for another run.

1000 feet of hole was made with an 18" Hughes Simplex Rock Bit in this same hole at higher levels.

Depend on Hughes Simplex Rock Bits for *all* Hard Drilling

Sold by Supply Stores Everywhere

Standard Refutes Charge Of Playing Politics

By Special Correspondent

HURON, S. D., March 24.—Emphatic denial that the Standard Oil Co. of Indiana is taking any active part or putting any money into the primary campaign in this state for selection of U. S. Senator is being made in the newspaper advertisement of that company. Charges of interference have been made by Gov. McMasters who has been making the oil industry the chief topic in his campaign for this office.

The advertising takes the form of publishing a letter to A. H. Dodsley, Huron manager of the Standard Oil Co. of Indiana, from Allan Jackson, vice president in charge of sales at Chicago, in which the company's policy in this regard is set forth. Manager Dodsley sets forth in the ad, entitled "An Open Letter to the People of South Dakota," that the policies outlined in the letter are being strictly followed in South Dakota. Mr. Jackson's letter follows:

"Our attention has been called to the fact that the Standard Oil Co. (Indiana) is being made a subject of political attack in the state of South Dakota, and certain charges have been made, which if true, put this company in the position of interfering in the present primary campaign in the state for the selection of a candidate for the office of United States Senator. It has been charged that the company has "been putting money into this campaign", and that we are "sending men up and down the state reading vicious propaganda" in order to prejudice the people against one of the candidates.

"Our instructions to you at all times have been positive upon the following points:

"That the Standard Oil Company (Indiana) must not be brought into a position where it is promoting or opposing the candidacy of any man for any public office. It has no candidate for office; it is supporting none, and it is opposing none.

"That the Standard Oil company (Indiana) does not put money into any political campaign either directly or indirectly.

"That the Standard Oil company (Indiana) must send no man or men about the state in an effort to defeat or elect any candidate.

"In a word, that the Standard Oil company (Indiana) devotes its entire time and energy to the oil business. It is not in politics, nor does it wish to be. The Standard Oil Company (Indiana) must leave the election of officers to represent South Dakota to the people of that state.

"We cannot believe that any employe of this company would violate these instructions and we know they have not been violated with the knowledge or consent of the general office.

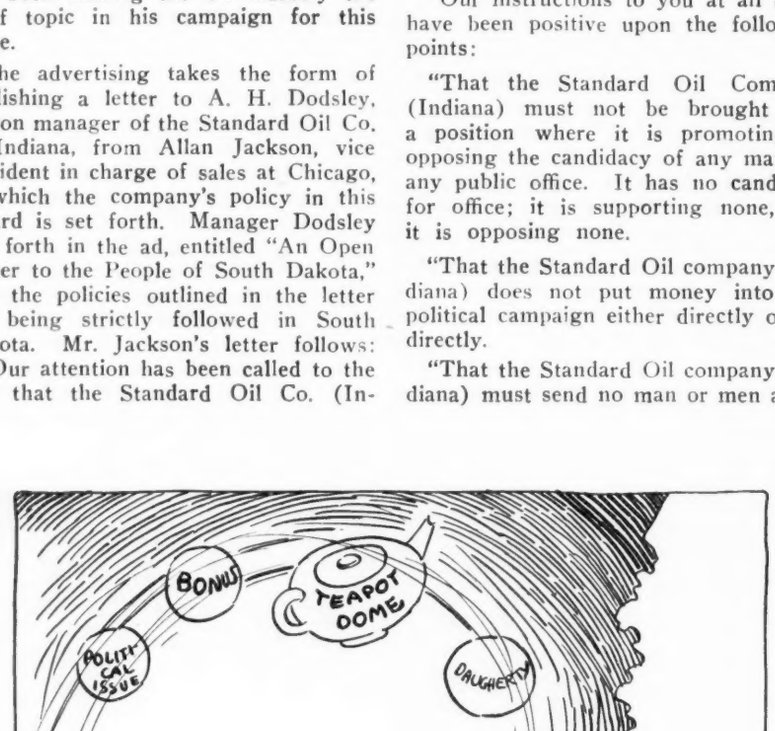
"Make it plain to every employe of the Standard Oil Company (Indiana) in your district that he is free to follow his own preference in politics. Notwithstanding the fact that Governor McMasters' statements in the heat of his campaign are extravagant, and made without any basis of fact, we feel reasonably confident that when he learns the truth he will be just with this company and the entire oil industry.

"The statement has been made that this company has succeeded in cornering the crude oil of the United States.

"This you may deny positively and with all emphasis. This company does not control directly or indirectly enough Crude Oil in storage to operate its refineries for six months, and has a financial interest in less than five per cent of the average daily production of Crude Petroleum in the United States. It has no agreement or understanding of any kind with any oil producer, oil refiner or oil marketer for the restriction of production, or manufacture, or the maintenance of price or any other illegal or improper purpose.

"Charges such as these tend to injure our Company, and we want you to take immediate steps to get our position before your customers in such a way that they will clearly understand that we are not in politics, and are not interfering or attempting to interfere in any way with any ones' candidacy for office.

"Please make careful investigation, and report to us immediately whether our standing instructions have been violated by any of our employes, and if they have not, take such steps as are necessary to deny the charges mentioned."



It's a good act if he can keep all the balls in the air.

DELPHOS, O., March 24.—The Delphos Oil & Gas Co., capitalized at $25,000, has recently been organized here by Frank Wulfhorst and other Delphos men. The company has started erection of a building on land leased from the Nickel Plate railroad. It will install four tanks for gasoline and kerosene storage, one of 5000-gallon capacity, one 6000-gallon, and two 8000-gallon, giving it a total storage capacity of 27,000 gallons.

The company will wholesale gasoline and oils and expects to deliver by tank truck to a number of towns in this vicinity.

THE EDITORS' VIEWPOINT

Co-operate With Hoover

IS THE oil industry overlooking a good stunt in not keeping rather close touch with Secretary of Commerce, Hoover, in much the same way that some other industries do, particularly the way agriculturalists keep in touch with the Department of Agriculture?

The Department of Agriculture is looked upon substantially as the mouthpiece of the farmer element. The department's officials are constantly making certain that the farmer's side of the story is presented to the public. They are champions for the farmer. The public can rave and curse about the high cost of food—they can talk about the inefficiency of the farmer, but the Department of Agriculture generally comes to their defense.

But how about other industries? How about Oil? There's not a single government department, as a department, comes to the defense of the oil business and why? Isn't it due to the fact that the oil industry has never seen fit to see that a government department is kept properly informed of its problems.

Just what Mr. Hoover's department might do for the oil industry in a concrete way other than keep a friendly eye on it, is hard to say off-hand. Of course, he is gathering statistics and that can be speeded up. He has taken up on behalf of the oil industry, once or twice, the subject of our foreign relations on oil,—but those negotiations didn't go far, presumably because the oil men didn't see them through.

Mr. Hoover's abilities and fairness, it seems to us, should be made use of while he is still in the cabinet. He's looked upon as fair in his judgment and accurate in his statement of facts by both industry and the public. His portfolio in the cabinet is particularly that of looking after industries. Possibly by way of overture, if the oil industry, through the American Petroleum Institute, were to have a number of its leading men confer with Mr. Hoover and present the various problems, some concrete assistance might be devised. At all events, Mr. Hoover would be informed about the industry, what it is doing, what it is up against, and possibly he might, in a purely advisory capacity, be of some assistance. It appears to us that here is one cabinet officer who should be kept in closer contact with the oil industry than he is.—W. C. P.

Prying Investigators Squelched

THE supreme court has again put a crimp in the aspirations of the Federal Trade Commission to make itself the dictator to all business in the country.

Upon resolution of the senate, the committee started an investigation of the tobacco business in the country to see if there is unfair competition in regulating prices. In the course of the investigation the commission served order upon the tobacco companies to permit its agents to examine the companies' files and records. When the companies refused, the commission applied to the courts for the authority and, the district court refusing, carried the case to the supreme court.

What the commission asked, in brief, was the unlimited right of access to the papers and affairs of any companies in any business that congress, through some whim or other, might ask an investigation into. Once that so-called right of the commission had been established, it would soon mean that one of its agents could walk into the office of most any business concern and demand general access to all its books and correspondence.

The supreme court ruled pretty definitely on the subject. It said in part, "The mere facts of carrying on a commerce not confined within state lines and of being organized as a corporation do not make men's affairs public, as those of a railroad now may be. Anyone who respects the spirit as well as the letter of the Fourth Amendment would be loath to believe that congress intended to authorize one of its subordinate agencies to sweep all our traditions into the fire and to direct fishing expeditions into private papers on the possibility that they may disclose evidence of crime." —V. B. G.

Gasoline Blind Pigs

THE oil marketing industry has its blind pigs. You will find them generally down some quiet street at a manufacturing plant—a soap company with a pump in the yard selling gasoline to the public 2 or 3 cents under the price of the established oil companies, or a basket factory, or a building supply yard. They talk a good deal about the price at which they sell, but not so much about the quality of their product.

They spring up in periods of a low refinery market for gasoline and they catch a certain amount of business. In fact, sometimes it's surprising how far a man will drive and how much of his own time he will take to save 10 cents on a five-gallon fill.

These blind pigs have no overhead expense to maintain, no trucks or tank wagon drivers to keep running. They are almost always at some plant that is buying gasoline in tank car lots for its own consumption, and the company or one or two of its officials decide to make a little money on the side. So they put in a pump and retail gasoline while the refinery price is low. When the price advances they close their tents, content to let the oil companies take the business then.

How to combat their effect on the public's ideas about the business is a problem many oil companies are confronted with and will be in future as well. Going consistently to the public with the message of the quality of their product, its uniformity, emphasizing in their actions and advertising the service they offer and the fact they are there to serve the public at all times, regardless of the condition of the market will all help to impress the distinction upon the motorist.—V. B. G.

Hand the soft rubber lemon squeezer to the association of state attorneys general. For operating efficiency as an asscciation their system would be hard to beat. Meeting every now and then—at the taxpayers' expense of course—they discuss in a comfortable learned fashion the ills of the industrial world and then "resolve" at length, calling upon the world at large to remedy them.

What could be a more comfortable feeling than to go home from such an association meeting with that warm inner feeling of accomplishment—five or six typed pages of "resolutions" properly drawn and endorsed, calling in a spirited manner upon the state and federal government, the Federal Trade Commission, the Supreme Court, acts of Providence and the Deity itself to carry them out? There's the modern idea of the conference, carried to the nth degree.

Legislating to control human impulses hasn't proved wonderfully successful, but we still wonder that the politicians don't pass a law compelling us to read the Congressional Record.

I don't believe there was ever a manufacturer who got more real pleasure out of his business than I do out of mine. Every day reports come to me of how well my Handy Ben Grease Pumps and Handy Ben Visible Oil Pumps are going over.

Every pump shipped from my factory *I know is right* and there's a lot of genuine satisfaction in knowing that every pump is going to be a profit producer for jobbers and dealers and is going to make real friends among the trade.

I *know* they are built right and what's more, they look it.

If you are not already sold on Handy Bens—then I'm anxious to give them a chance to sell themselves by offering you a thirty day free trial on either my Model 6 Grease Pump or Model 8 Visible Oil Pump.

Write for them

Ben Bennett

President

Bennett Injector Co.

MUSKEGON, MICHIGAN

Inventors and Manufacturers of Grease and Oil Handling Devices

State Gasoline Figures Show Weather Governs Volume Of Trade

By Roger B. Stafford

STAFF REPRESENTATIVE

CLEVELAND, March 24

THE weather man has the tightest grip on the oil industry so far as volume of sales is concerned. This is revealed in an analysis of gasoline sales in states which levy taxes on gasoline or which still maintain gasoline inspection.

Average amount of gasoline per car used yearly is heaviest in the south and along the seacoast where ocean breezes have a tendency to temper the winds of summer and the blasts of winter. The average gallonage per car then shades downward in the northerly states, as is shown in the accompanying map.

Several conspicuous exceptions occur, however. Gallonage in Minnesota ranks high among the northern states. It also is high in the New England states, probably due to the trucking for manufacturing plants and consumption by summer tourists. Averages for Maine, New Hampshire and Vermont are estimated in part because figures for the whole year were not obtainable. the gasoline tax not having become effective until the arrival of good motoring weather. Allowance has been made for the months of low consumption but only actual figures for a whole year can overcome errors which are bound to enter into any estimate.

Good Roads Rank Second

Good roads rank second to weather as a factor in gasoline consumption. The high percentage of surfaced roads in Minnesota undoubtedly is the reason why the average gasoline gallonage there runs higher than that in more southerly states.

But it was in the south, where motoring is a pleasure even in winter, that average consumption ran high. Florida set the pace for the country in 1923. Average amount of consumption, based on the mean number of automobiles registered during the year, was 676.9 gallons per car. Automobiles owned in Florida probably did not average this high because cars of winter tourists undoubtedly raised the volume, but the same intangible factor—the tourist trade—also applies in summer months to northern states.

Alabama and Georgia rank close second and third in average consumption. Then it will be seen on the map that high averages cling closely to the states bordering the two oceans and the Gulf of Mexico. With the exception of Vermont, states averaging higher than 500 gallons per car per year lie south of the historical parallel 36-30, or along the sea.

Maryland Average Low

Of the states bordering the oceans or gulf and having gasoline taxes, only Texas, Washington and Maryland fell below the 500-gallon level. The figures for Maryland, based upon returns for a full 12-month period, appear far too low. It is the most puzzling average of the 35 states having taxes on gasoline and of the four other states which have inspection figures upon which to determine average consumption.

Maryland has a great amount of hilly country which may keep down extensive use of automobiles but probably the chief factor entering into the state low average is the fact that the number of automobile registrations includes cars of non-

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SUNSHINE and balmy winds are the real gasoline trade builders. Good roads also lure the family flivver from the garage but the weather man is the one who holds the throttle of motor fuel business, an analysis of state gasoline consumption statistics reveals.

Average consumption by states as shown by the amount of gasoline on which taxes were paid last year, should give the jobber an index as to the volume of trade he may expect in his community. State averages range from 332 to 676 gallons per car per year. Climate and roads are the determining factors.—Editor.

Average Gallonage Of Gasoline Per Car In 1923 In States Having Motor Fuel Taxes Or Inspection

QUALITY TOKHEIM

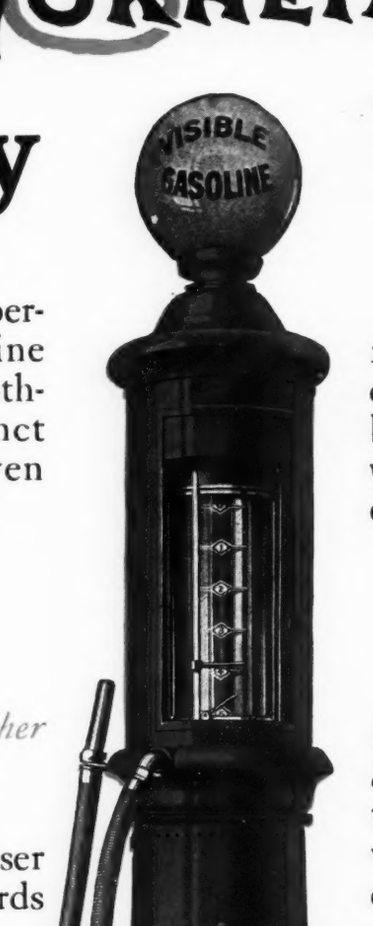
Victory Visible

The most highly perfected of all gasoline pumps—visible or otherwise. Two distinct types—motor driven and hand-operated.

* * * * *

A pump that can neither cheat nor be cheated.

Protects the dispenser as fully as it safeguards his customers. All operations, such as Filling, Discharging or Draining, are interlocking, so that only one can function at a time. The principle by which we accomplish this interlocking is fully protected by broad patents.



A magnet that draws motorists from long distances—because its beauty attracts and its visibility inspires confidence.

* * * * *

Masterpiece of the House that created Visible Dispensing and is the basis upon which we have built the fastest-growing Oil Pump and Tank business in America. This Pump is equally popular with Refiners, Jobbers, Retailers and the Public.

* * * * *

Bulletin No. 126 describes the motor-driven Pump No. 200

Bulletin No. 200 describes the hand-operated Pump No. 325

Tokheim Oil Tank & Pump Co.

FACTORY AND GENERAL OFFICES

1602 Wabash Ave., Ft. Wayne, Indiana

OK

residents domicile temporarily within the state.

Many cars owned by residents of the District of Columbia are registered in Maryland. As the number of these registrations is not segregated in the Maryland registration report, they cannot be considered in figuring an average. In 1922 the number was about 45,000. If that number were carried over into 1923 and were deducted from the total Maryland registrations, the Maryland average would be around 485 gallons per car instead of 366.2.

Motoring was at a greater rate last year than in the previous year in most states, a comparison of 1923 and 1922 averages shows. In 13 of the states having taxes in 1922, average consumption per car compares:

	1923	1922
Arizona	503.2	477
Colorado	417.9	418
Florida	676.9	562
Georgia	603.0	533
Kentucky	332.7	352
Louisiana	578.5	529
Montana	348.7	406
New Mexico	534.3	615
North Carolina	522.4	470
Oregon	509.4	452
Pennsylvania	385.3	353
South Carolina	506.1	370
Washington	488.4	467

The two Carolinas offer an interesting comparison, climatic and economic conditions being about uniform. The average in North Carolina was 522.4 gallons per car while in South Carolina the average was but 506.1. In those states the matter of hard surfaced roads entered. At the beginning of 1923, 18,871 miles of the 68,204 miles of roads in North Carolina outside of cities and towns were hard surfaced while in South Carolina only 7456 of the 61,850 miles of inter-city roads were so improved.

Weather Factor Leads

To show that hard roads are less of a factor than weather, Indiana's average was 369.1 gallons per car, based upon inspection figures. Indiana at the beginning of 1923 had 42,292 miles of improved roads, more than any other state in the Union. Tennessee with but 10,604 miles of hard roads averaged 524.8 gallons per car, indicating the weather factor leads.

Consumption average for Kentucky is a bit puzzling. The state ranks well in the list of progressive road builders but its average per car was only 332.7 gallons. The gasoline bootlegger has been a factor in Kentucky. This is proved by the activity of a number of the state's leading refiners and distributors in forming a committee to help the state tax commission to collect the gasoline tax. Actual consumption may be higher than is shown in the accompanying table because every gallon sold upon which the payment of tax had been evaded, brings down the average derived from official state collection reports.

WHAT do the states do with the proceeds of gasoline excise and privilege taxes? This question will be answered next week in NATIONAL PETROLEUM NEWS in a report on a survey of the tax laws of the 35 states that have gasoline taxes. —Editor.

Taxes Exceed $37,000,000

Gasoline consumers in 35 states last year paid into the state treasuries more than $37,000,000. Because many of the tax laws did not become effective until late in the year, returns for a full 12 months would probably run close to $50,000,000.

The 35 states having taxes contain less than half of the total automobiles in the country. The fact that they tax gasoline for highway building and maintenance also does not indicate that they lead in the amount of surfaced roads. According to a compilation published recently by Automotive Industries, these 35 states had a total of 1,962,997 miles of roads outside of cities and towns. Of this amount only 263,198 miles was surfaced. Automotive Industries road statistics for the states not having gasoline taxes or inspection show these mileages:

	Total Mileage	Surfaced Roads Miles Jan. 1, 1923
Illinois	96,326	12,435
Iowa	104,082	3,424
Massachusetts	18,868	6,811

Consumption Per Car; 1923 Automobile Registrations; Gasoline Tax Receipts;

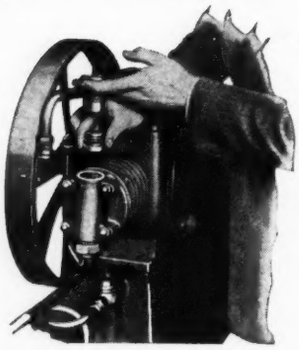
State and Tax Per Gallon	Cars and Trucks Jan. 1, 23	Cars and Trucks Jan. 1, 24	Motor Fuel Tax Collected 1923	Gallons Taxed	Average Gallons Per Car Per Year	Total Roads Miles Jan. 1, 23	Surfaced Roads Miles Jan. 1, 23
Alabama 2c	90,052	126,642	$ 1,249,759.76	(a) 65,475,886	604.3	58,410	10,778
Arizona 1 and 3c	38,034	48,741	422,692.74	21,835,341	503.2	21,227	1,647
Arkansas 1 and 3c	86,425	111,946	1,249,399.90	46,486,055	468.6	74,866	4,744
California 2c (b)	861,805	1,100,283	2,991,854.26	149,592,713	(e) 543.6	75,889	15,263
Colorado 1 and 2c	162,328	189,356	(c) 922,663.73	(c) 73,500,474	417.9	48,143	6,230
Connecticut 1c	154,675	177,931	(e) 910,000.00	(e) 91,000,000	(e) 547.2	12,152	2,374
Delaware 1c	24,560	29,977	(d) 104,812.75	(d) 10,481,275	(e) 539.5	3,933	528
Florida 1 and 3 c (a)	115,891	160,000	1,854,913.16	93,381,615	676.9	27,613	6,876
Georgia 1c	145,584	173,794	962,986.58	96,298,658	603.0	94,000	19,060
Idaho 2c	53,874	62,379	(f) 396,487.19	(f) 198,24,359	(e) 374.0	31,099	3,597
Indiana 2c (a)	469,939	583,342	(g) 2,906,428.25	(a) 193,227,050	369.1	76,246	42,292
Kentucky 1c	154,021	198,347	586,188.06	58,618,806	332.7	68,704	16,039
Louisiana 1c	102,284	138,500	754,348.93	75,434,893	578.5	39,803	2,527
Maine 1c	92,539	108,609	(h) 286,140.90	(h) 28,614,090	(e) 521.4	21,483	3,303
Maryland 1c	165,624	209,938	687,674.01	68,767,401	366.2	14,772	3,805
Mississippi 1c	77,001	104,400	494,242.73	49,424,273	544.9	58,085	6,357
Montana 2c	62,649	73,828	441,258.04	22,062,902	348.7	64,782	1,901
Nevada 2c	12,647	15,700	(i) 120,953.14	(i) 6,047,657	(e) 426.5	26,057	250
New Hampshire 1c	48,293	59,571	(j) 182,811.14	(j) 18,281,114	(e) 544.0	13,841	1,837
New Mexico 1c	25,473	31,737	152,950.43	15,295,043	534.3	45,549	2,101
North Carolina 1 and 3c	182,550	247,612	2,909,904.74	112,365,930	522.4	68,204	18,871
North Dakota 1c	99,052	109,244	400,817.20	40,982,558	393.5	106,523	853
Oklahoma 1c	249,659	307,000	(j) 602,310.19	(j) 60,231,019	(e) 432.8	134,263	2,648
Oregon 2 and 3c	134,299	166,412	1,887,922.29	76,603,878	509.4	45,475	9,029
Pennsylvania 1 and 2c	829,737	1,064,624	5,490,522.66	364,939,041	385.3	99,991	14,863
South Carolina 2 and 3c	95,978	128,656	1,599,032.26	56,843,453	506.1	61,850	7,456
South Dakota 1c (a)	125,238	131,720	550,536.84	55,053,684	428.5	115,485	875
Tennessee 2c	135,716	173,365	(k) 1,217,073.00	(e) 81,114,000	(e) 524.8	62,546	10,604
Texas 1c (b)	526,238	688,899	690,573.93	69,057,393	(e) 454.4	167,685	16,986
Utah 2½c	49,156	66,025	(l) 492,648.93	(l) 19,757,997	(e) 381.1	23,047	2,987
Vermont 1c	43,881	52,776	(k) 179,698.56	(k) 17,969,856	(e) 524.0	14,677	3,694
Virginia 3c	169,000	219,092	(m) 1,556,920.99	(m) 51,897,366	(e) 508.0	59,080	7,815
Washington 1c	220,957	261,224	1,187,370.91	118,737,091	488.4	45,816	12,872
West Virginia 2c	112,763	162,191	(j) 503,604.78	(j) 25,180,239	(e) 348.8	35,173	1,558
Wyoming 1c	30,637	39,831	140,250.33	(f) 14,025,033	(e) 475.4	46,528	578
Total	5,859,409	7,525,564	$37,088,753.29	2,320,502,505		1,962,997	263,198

States Having Inspection But No Taxes on Gasoline

Kansas	327,194	375,594	.....	160,009,350	463.9	128,552	1,372
Minnesota	380,557	448,187	.....	186,076,100	452.3	107,103	18,982
Missouri	392,969	476,373	.....	158,549,500	371.1	111,520	8,346
Nebraska	256,654	286,053	.....	113,203,710	431.6	86,556	656

(a) Volume figures are from inspectors' reports.
(b) Tax and gallonage figures for last quarter of year.
(c) 11 months ended Nov. 30.
(d) April 22—Dec. 31.
(e) Estimated in part.
(f) April 1—Dec. 31.
(g) June 1—Dec. 31.
(h) July 7—Dec. 31.
(i) March 20—Dec. 31.
(j) July 1—Dec. 31.
(k) April 1—Dec. 31.
(l) March 8—Dec. 31.
(m) June 27—Dec. 31.

And now Usaco Pioneers with Plate Valves



Years Ago Usaco perfected the first self-contained fully automatic compressor.

Today two-stage compressors are made and recommended by practically all air compressor manufacturers.

And Now—Usaco raises another new standard in using plate valves, for the first time in a tire inflating compressor.

Usaco U-Say-ko AIR COMPRESSORS

Enormous production, specialized effort, and a policy to use the best obtainable, even at higher cost, has made it possible to incorporate them in Usaco Compressors.

To change a Usaco Plate Valve simply loosen nut, swing intercooler aside;—insert valve assembly and gasket;—then replace intercooler and tighten nut. Simple—no seat to grind—no possibility of leaks.

Among many other Usaco features are: *Rigid Piston Assembly* — eliminates all possibility of piston slap or misalignment: *Regulated Pin Splash Oiling System* —bearings flooded with oil thrown by splash pins and diverted to proper points by baffle plates.

Write Now for complete facts about the compressor with these exceptionally efficient valves.

The United States Air Compressor Co.
Harvard Ave. Cleveland, O.

Pioneers - the World's Largest Manufacturers of Two Stage Tire Inflating Air Compressors

GASOLINE

Any Gravity Any End Point

Clayton Oil & Refining Co.
Dallas, Texas

Michigan	77,283	19,756
New Jersey	14,061	6,824
New York	81,878	20,210
Ohio	84,219	37,272
Rhode Island ...	2,274	840
Wisconsin	78,679	21,672

States east of the Mississippi have been leaders in the building of surfaced roads, although Missouri and Minnesota rank well.

In the accompanying table reports for West Virginia, Indiana and Connecticut gasoline is used for all purposes and not for motor vehicles only. The average consumption per car is obtained by dividing the number of gallons by the mean number of automobiles registered during the year. Where gallonage returns are for only part of the year estimating has been resorted to and allowances made for low consumption in the early months of the year.

Stocks Of Gasoline Grow In February

CLEVELAND, March 24.—Stocks of gasoline at refineries representing 68 per cent of the operating capacity of the United States increased 94,800,000 gallons during February, the American Petroleum Institute reports. If this ratio were maintained at all refineries, stocks increased approximately 154,000,000 gallons.

At the plants which reported to the institute, kerosene stocks increased 18,903,000 gallons, and lubricating oils 2,778,000 gallons.

Stocks of crude oil held by the refiners also increased, supplies of domestic crude gaining 1,669,166 barrels and foreign crude 405,398 barrels.

Stocks in pipe line and at tank farms east of the Rockies increased 627,000 barrels during the month.

Fischer Leaves Sinclair

CLEVELAND, March 24.—F. W. Fischer, who for some time has been manager of the Cleveland metropolitan district of the Sinclair Refining Co., resigned March 15 to enter a new line of business. Prior to coming to Cleveland Mr. Fischer was chief engineer in charge of station construction for the Sinclair Refining Co. with headquarters at Chicago. The construction program being about over he went into the sales end.

Mr. Fischer is succeeded at Cleveland by C. C. Martin, who is assistant division manager at Cleveland in charge of bulk sales. Mr. Martin is succeeded by A. J. Burkhardt, formerly in charge of bulk sales in the central district.

TULSA, March 22.—P. A. Conway, commerce counsel for the Western Petroleum Refiners Association, has filed a formal protest with E. B. Boyd, chairman of the Southern Ports Foreign Freight Committee of the railroads against cancellation of present export rates from Oklahoma and Texas refineries and substitution of higher rates on the 24½-cent basis which was in effect before April 4, 1923.

Texas Co. Sues Warner-Quinlan For Using Dubbs Process

Staff Special

NEW YORK, March 22

ANOTHER battery has opened up against the patent position of the Universal Oil Products Co. as owner and licencer of the Dubbs cracking process.

This time the attack comes from the camp of the Texas Co., owner of the Adams and Holmes Manley patents and chairman of the membership committee of the Patent Club. It takes the form of a suit against the Warner-Quinlan Co., Inc., Warners, N. J., charging infringement of some of the Adams patents through use of the Dubbs cracking process. The Warner-Quinlan company is primarily interested in the manufacture of asphalt, the production of gasoline being secondary. It is believed that the selection of the Warner-Quinlan company as the defendant rather than any other user of the Dubbs process was dictated by the desire to get the suit into a court in an eastern manufacturing district where the judges are more familiar with the procedure of handling patent litigation than are judges whose experience is more limited in such cases.

After the various preliminaries establishing the identity of the plaintiff, of Dr. Adams and the fact that Dr. Adams was granted certain patents which he assigned to the Texas Co., the petition states:

"That, on information and belief, the said defendant, Warner Quinlan Co. Inc., well knowing the premises and the rights secured to the plaintiff herein as aforesaid, without the license or permission and in violation and infringement of the plaintiff's rights under letters patent No. 1,320,354, particularly as to claims numbered 13, 14, 15, 16, 17, 23 and 24 thereof, No. 1,320,727 particularly as to claim numbered 23 thereof and No. 1,327,263 particularly as to claims numbered, 1, 2, 4, 5, 6, 7, 8, 9, 15, 17, 24, 25, 26, 27, 28 and 29 thereof, and contriving to injure the plaintiff and deprive it of the benefits and advantages which might and otherwise would accrue unto it from said inventions, after the issuance of the said letters patent and within six years before the commencement of this suit, did unlawfully and wrongfully make and use apparatus described and claimed in claims numbered 13, 14, 15, 16, 17, 23 and 24 of said letters patent No. 1,320,354, apparatus described and claimed in claim numbered 23 of said letters patent No. 1,320,727 and did practice the process of and made, used and sold product made in accordance with the process described and claimed in claims numbered 1, 2, 4, 5, 6, 7, 8, 9, 15, 17, 24, 25, 26, 27, 28 and 29 of said letters patent No. 1,327,263 in the state of New Jersey and elsewhere in the United States and is threatening to continue to carry on said infringement whereby plaintiff has been and will be damaged.

"That on information and belief the said defendant has derived and received and will derive and receive, from the aforesaid infringement, gains, profits and advantages, but to what amount the plaintiff is not informed and cannot set forth; that the plaintiff by reason of the aforesaid infringement has been and will be deprived of and prevented from receiving, if such infringement is not restrained by this court, all the gains and profits to which the plaintiff is lawfully entitled and which it would have derived and received and would now be deriving and receiving but for the aforesaid infringement; that by reason of the aforesaid infringement the plaintiff has been irreparably injured and has sustained loss and damage thereby; and unless the infringement is immediately restrained by an order and writ of injunction issuing out of and under the seal of this court, further irreparable injury, loss and damage will be caused to plaintiff.

"Plaintiff therefore prays:

"That the defendant be required to make full, true, direct and perfect answer, according to the best and utmost of its knowledge, remembrance, information and belief (but not under oath, an answer under oath being hereby expressly waived) to all and singular the matters and things hereinbefore charged.

"For a permanent injunction and a preliminary injunction pending this suit, restraining the defendant its agents, attorneys officers, servants, employees and all others acting by and under its direction or authority from directly or indirectly making or causing to be made, using or causing to be used, selling or causing to be sold, employing or causing to be employed, the inventions described and claimed in aforesaid claims, or from infringing upon or violating the inventions of said letters patent in any way whatsoever.

"For costs of this suit and for an account of profits accrued to defendant and damages sustained by plaintiff from said infringement.

"For such other and further relief as the circumstances of the case may require."

The defendant is given until April 1 to file an answer to the suit.

Pacific Coast Safety Council To Meet April 7-9

Staff Special

HOUSTON, March 21.—Mid-Continent and southwestern oil companies will be represented in the Pacific Coast Safety Conference at San Francisco, April 7-9, when the third day's session is held under the auspices of the Petroleum Section of the National Safety Council. D. J. Wallace of the Humble Oil & Refining Co., Houston, is chairman of this section.

The meeting will be held at St. Francis hotel, San Francisco. It is announced that it will open with a round-table discussion of educational methods and organization in promoting safety in producing fields and refineries. Safety committees and their functions, suggestion systems, development of safeguards, and proper supervision are important points to be discussed.

A standard hand book for refineries, field operations, pipe lines and marketing departments will be considered and suggestions made for use in the outline of the proposed standard rule book. The third subject will emphasize the relation of the petroleum industry to public safety, particularly in the refinery, pipe line and marketing divisions of the industry.

Inspection trips will also be made by the oil men to California refineries and producing fields. The progress of safety work in the oil fields of California in the last few years has been remarkably rapid and thorough. A complete set of safety orders for drilling and production has been developed by the Industrial Accident Commission of California with the co-operation of the California petroleum industry. The orders will become effective sometime in the spring and are expected to have a definite effect on operating conditions.

Roy W. Kelley, of the Associated Oil Co., chairman of the bulletin committee of the petroleum section of the National Safety Council, and other California oil men are making plans to make the meeting of definite value to delegates from the middle west districts.

The first day's session of the conference will be devoted to a general discussion of handling material and the human factor in safety. R. H. Ivory, standard Oil Co., will discuss the qualifications of a successful safety engineer at the afternoon session of the first day.

L. A. DeBlois, president of the National Safety Council, Will J. French of the Industrial Accident Commission of California and Jay Stevens, chief inspector of the National Board of Fire Underwriters of San Francisco, will be principal speakers at the banquet on the night of April 8.

Refunds In Oil Company Taxes Are Next To Be Investigated

By Special Correspondent

WASHINGTON, March 21.—Refunds of millions of dollars in taxes to oil companies and other corporations by the Treasury Department will come under the scrutiny of a special committee of the Senate ordered to investigate the administration of the Bureau of Internal Revenue.

The resolution of inquiry was adopted without a record vote March 12, after a sharp debate during which Senator McKellar, Democrat, of Tennessee, demanded publicity of income tax returns, made the specific charge that the Gulf Refining Co., a Mellon concern, among others, had been refunded $3,328,139.99 in taxes in 1921. He based his charge on information furnished him by Secretary of the Treasury Mellon.

Senator Couzens, Republican, of Michigan originally introduced the resolution Feb. 16, but, after being reported twice, it was sent back each time to the Committee on Contingent Expenses for amendments. It was finally reported with nothing left of the Couzens preamble, which had stated that, through improper organization or gross inefficiency, the Bureau of Internal Revenue was handicapped by a system whereby the government lost millions of dollars, taxpayers were oppressed and "corruption, or the opportunity for corruption" existed.

Another sentence of the preamble read: "It is claimed that numerous tax attorneys, agents, specialists, advisers and lobbyists in the employ of claimants for refunds and exemption, some of whom it is claimed pretend to have influence, are carrying on negotiations" with officers of the bureau of these claims.

The special committee appointed to conduct the investigation, which will get under way within a week, consists of three Republicans and two Democrats, with Senator Watson of Indiana, chairman. The other members are Senators Couzens and Ernst, of Kentucky, Republicans, and Senators Jones of New Mexico and King of Utah, Democrats.

Although the preamble drawing attention to the alleged state of affairs in the Internal Revenue Bureau has been stricken out, the simple order to investigate the bureau is regarded by the committee as sweeping enough to include all activities.

Senator King made unsuccessful efforts to incorporate in the resolution a provision calling upon the Secretary of the Treasury to submit a report showing the number of corporations which have filed income tax returns claiming deductions for depletion of oil wells, together with a statement of all deductions and discovery values which have been allowed such corporations. He also desired a statement of the number and amount of all claims which have been filed for the refund of taxes by oil corporations, the grounds alleged for such refunds, what refunds have been allowed, and the number and description of claims for refund which are now pending.

Withdrawn Preamble

Given to understand that the investigation would be broad enough to cover this information, Senator King agreed to withdraw his amendment. "As a member of the committee," he stated, "I will press vigorously for a thorough investigation of the refunds in taxes granted to these oil companies and other corporations." He declared it has been stated repeatedly that many oil companies have been receiving large refunds in taxes, some of them under very suspicous circumstances.

A recent report made by the Treasury Department in response to a demand by the Ways and Means Committee of the House showed that some fifty odd oil companies had recovered hundreds of thousands of dollars in taxes illegally or erroneously collected covering a period of several years. Using that report as a partial basis, the Senate investigating committee will demand information concerning the circumstances under which these refunds were made, as well as all papers and correspondence.

As originally introduced, the Couzens resolution required a report from the committee not later than May 1, 1924 so that the information it may obtain may be ready for the Senate in considering the pending tax revision measure. This was eliminated, however, and the committee is merely directed to make "recommendations for corrective legislation." That one of the recommendations would include the creation of a court to pass on all requests for refunds, where hearings would be conducted in the open, was indicated by members of the investigating committee.

Letters Echanged

Regarding the Gulf Refining Co., Senator McKellar read a series of letters exchanged with Secretary Mellon on the taxes paid by the company, a Mellon concern and other companies in which the Secretary of the Treasury was interested. He asked Mellon what tax refund had been granted the Gulf Refining Co. in 1921, and Mellon replied that a refund of $3,328,139.99, ordered by the Wilson administration, was paid in his (Mellon's) term.

"I have been informed that, in the summer of 1921, a refund was paid to the Gulf Refining Co. and its subsidiary corporations for something more than $4,000,000," Senator McKellar wrote. "I do not believe that such a settlement comes within the secrecy provision of the income-tax return statute. If it was paid it must have been paid out of some appropriation. It should show in any statement of receipts and expenditures provided for by the Constitution."

In replying, Secretary Mellon stated that from the statute it was obvious that it would be unlawful for him to furnish complete information as to the settlement of the Gulf Refining case and that of the Atlantic, Gulf & West Indies Steamship Co., about which McKellar also inquired.

"The refunds to the Gulf company and its subsidiaries," Secretary Mellon stated, "were charged against three appropriations, depending upon the year in which the taxes refunded were originally collected. The payments were $766,112.29 out of the appropriation for 'Refund of taxes illegally collected, 1918 and prior years;' $1,350,884.63 from a similar appropriation for 1919; and $1,211,143.07 for 1921.

"The amounts of the refunds and all details in connection with the settlement of the Gulf company cases were determined by the Bureau of Internal Revenue before my appointment as Secretary of the Treasury, although the actual payment of the amount refunded took place in April, 1921, shortly after I became Secretary. I had no personal knowledge of these refunds at that time."

Western Refiners File Dome Loading Case

Staff Special

TULSA, March 22.—The Western Petroleum Refiners Association has filed a formal complaint with the Interstate Commerce Commission seeking the privilege of loading tank cars in the dome to make up for shrinkage in volume of commodities loaded at temperatures higher than 60 degrees F. The association names 190 railroad companies as defendants in its bill of complaint.

Under present regulations, railroads demand that freight be paid on the shell capacity of tank cars as a minimum. If loading extends into the dome the shipper must pay on every gallon so loaded.

The refiners assert that oil is sold on the basis of its volume at 60 degrees F. but that it is impractical and often impossible to load at that low a temperature. At higher temperatures there is no variation in weight. Refiners declare that they are forced to pay freight charges on gallonage and weight neither sold nor shipped. They ask a more equitable ruling which will not be in violation of Section 1 of the interstate commerce act.

TULSA, March 22.—A special rate of 22 cents per 100 pounds on petroleum and its products from Holdenville and Wewoka to Texas Gulf ports for export and coastwise shipping is proposed by southwestern railroads.

4000 Square Inches of Advertising Space FREE

Are You Using It?

As an advertising proposition to push the sale of your product — where can you beat this Gilbert and Barker pump?

One hundred square inches of advertising space in some magazines costs as much as several thousand dollars — yet with this Gilbert and Barker pump you get 4,000 square inches of display space that doesn't cost you an additional red cent!

Think of these pumps carrying your trade-mark, out there on the curb in hand-picked, preferred positions, attracting the attention of every motorist. They will get your product known and used, and you will obtain real advertising value plus economical distribution with one effort and one outlay.

Let us send you a copy of our booklet showing practical examples of pump advertising. There's no obligation whatever; just write for a copy of "Some Business Thumbprints Effectively Advertised."

Other things being equal — it's the pump with the greatest advertising space that is the best buy.

GILBERT AND BARKER
MANUFACTURING COMPANY
PUMPS AND TANKS FOR THE OIL TRADE
SPRINGFIELD, MASS., U.S.A.

Refinery Heat Losses And Insulation-Stills And Settings

By H. S. Bell
Consulting Engineer

NEW YORK, March 24

HEAT may flow from one place or body to another in three ways: conduction, radiation and convection.

Conduction is that method of transfer whereby the energy is passed along from a particle of higher temperature to one of a lower temperature by means of their physical contact. It has its greatest magnitude in solids, is of slight importance in liquids and of very little importance in gases. This follows naturally, due to the fact that the molecular contact in the three classes of matter is more intimate in the order named.

Radiation is the transfer of heat from one body to another by wave motion through space. Different bodies and different surfaces have variant powers of radiating and of reflecting heat waves.

Convection is the transfer of heat by the movement of some portion of a body whose temperature has been raised, to another place where the temperature is lower with consequent rise in temperature of the medium as the portion gives up heat. It may be visualized as a charge on a particle in a mass, which particle moves to another position and liberates the charge to other particles. Obviously transfer of heat by convection is limited to liquids and gases as a medium.

Sources of Heat Loss

A brief analysis of how losses of heat by the above means of transmission affect the refinery, follows. From the fire-boxes of furnaces of stills, boilers, etc., heat is conducted to the outside faces of the settings and to the exposed steel surfaces of the equipment.

From such surfaces the heat is radiated to the air, this loss being increased by the convection currents set up. The amount of heat so lost is dependent upon the conductivity of the walls, the nature of the surface giving up heat to the air, and the velocity of convection or other currents in the air.

The actual loss from a surface is, therefore, decidedly involved. Experimental data place the loss from a bare steel surface at 2.5 to 5.5 B.t.u. per square foot per hour for each degree difference between the temperature within the vessel and the air outside, depending upon the amount of this difference. Figure 1 on the opposite page illustrates this graphically.

After bare plates and pipes, the exposed brick surfaces of still and boiler settings and similar equipment, are next of importance. Two factors enter into such losses, namely, the conductivity of the materials used in the walls and the radiation to the atmosphere. The problem would be very much involved, if it were not for the fact that radiation will dissipate the heat brought to the surface by conduction for the usual conditions.

(See Bulletin No. 8 Bureau of Mines—"The Flow of Heat through Furnace Walls" by Ray and Kreisinger). We are therefore, principally concerned with the heat transmitted by conduction.

IN THE accompanying article Mr. Bell discusses in clear fashion the sources of heat losses in refineries from lack of proper insulation, the discussion being practically limited to losses from still and boiler surfaces and settings. Mr. Bell furnishes charts that show the loss per hour in B. t. u. from bare surfaces and poorly insulated surfaces at varying temperatures and translates these losses into actual tons of coal wasted per year.

His next article, to be published in the April 3 issue, takes up the question of losses from improperly insulated steam lines, both saturated and superheated, from hot oil lines—from tanks whose contents must be heated to permit them to be pumped, the filter house and the wax plant. It is doubtful if the sources of heat loss in the refinery and the methods of reducing them have ever before been so graphically placed before the refining industry.—Editor.

Formula For Calculation

A formula often used for this work is—

$$K = \frac{1}{\frac{t}{c} + \frac{t'}{c'} + \ldots\ldots \frac{t^m}{c^m} + f}$$

K=B.t.u. loss per square foot per hour per one degree F. temperature difference between furnace and outside air.

t, t′,....t^m=thickness in inches of different components of wall.

c, c′,....c^m=conductivity, B.T.U. per square foot per hour per 1″ of thickness, per 1° difference between faces, at operating temperature.

f=skin factor. (brickwork=.3)

This formula embraces theory regarding conductivity and also introduces the skin factor, which corrects the slight influence of radiation.

From experiment, the value of c of the ordinary materials used for settings will increase with the temperature. This is illustrated in the table below giving approximate conductivities. (Univ. of Illinois Engineering Bulletin No. 122 and B. Dudley, Jr., Transactions American Electro-Chemical Society 1915).

Temperature—Degrees F.	400	600	800	1000
Fire brick	6.6	7.2	7.9	8.6
Common brick	6.1	6.6	7.0	7.4
Concrete	9.5	10.0	....	....
	1200	**1400**	**1600**	**1800**
Fire brick	9.2	9.9	10.6	11.2
Common brick	7.9	8.3	....	....
Concrete	...	...	....	....

To apply this law to the conditions encountered in the refinery, Figure 2 on the opposite page is offered.

One word of caution in the use of the chart is to be reasonably sure that the assumption of the average furnace temperature is approximately correct. For instance, the temperature in the fire-box of the usual still may approximate 1800 to 2000°.

With the high temperature head between furnace gases and the oil, the drop in temperature is very rapid. The flue gases may leave the still at 800°, but the average temperature within the setting will not be the mean (1300 to 1400°) between the two figures. It will be much nearer the lower figure.

While the heat imparted to the furnace walls adjacent to the fire-box will be much greater, this heat will not all flow directly through to the air at this point, but will be in part conducted to relatively cooler portions of the setting.

For this reason, lacking actual test data, the approximation of the average temperature within the setting is a question of judgment. If it is taken at about 25 per cent of the difference between fire-box and outlet flue temperatures above that of the outlet flue, it is believed rational results will be attained.

We have seen that conduction is a transfer of molecular movement by direct contact, and radiation is a transfer by wave motion through a gas. The heat losses due to convection, while important, are usually first dependent

upon conduction and radiation. The modern practice of heat insulation is to cover the hot surface with a material having in itself a low heat conductivity and which in addition imprisons a large number of minute air cells. The air cells offer high resistance to heat conduction only when completely confined to prevent convection or other currents and of minute size.

Insulating Materials

Many familiar materials present themselves to mind, such as, magnesia blocks, asbestos sponge, hair felt, infusorial earth in block and powder form, cork,

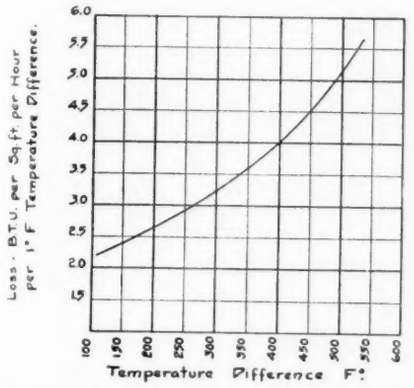


Figure 1—Loss per square foot bare flat steel surfaces.

etc. All of these are of undoubted efficiency in stopping the flow of heat, but their selection for the particular problem has many angles to consider.

For high temperatures, such as encountered in oil refineries, we must consider:

1. Efficiency of insulation at the temperatures encountered.
2. Temperature at which the material will break down.
3. Mechanical strength.
4. Durability.
5. Resistance to weather conditions.
6. Cost.

From the preceding, it will be well to turn to the different individual classes of equipment, approximate their losses and see how they can be reduced.

Assume an ordinary uninsulated 500-barrel still 10 feet in diameter by 40 feet long, in an independent brick setting. The top half and two ends will present 776 square feet of radiating surface. The average temperature within the still will depend upon the work being done, the method of operation, cycle, idle time, etc.

Figuring Losses in B.t.u.

For the example, let us assume this temperature at 450° for 80 per cent of the working year. For an average air temperature of 60°, the loss per square foot of surface will be 3.9 B.t.u. per hour for each degree difference in temperature. (See Figure 1.) The difference being 390°, the loss is 1521 B.t.u. per hour. This represents 8,300,000,000 B.t.u. per year for the conditions cited.

The walls of a separate setting will approximate 1200 square feet of exposed surface with an average thickness of 13½ inches of fire brick and 8 inches of common brick. The average temperature within the setting will be assumed at 1000° F. The chart of figure 2 shows that 283 B.t.u. will be dissipated each hour for each square foot. The loss from the setting will approximate 2,380,000 B.t.u. per annum at 80 per cent service factor.

A total of 10,680,000,000 B.t.u. is thus lost. If coal of 14000 B.t.u. were burned at 100 per cent efficiency, this would represent 382 tons per annum. Oil still efficiencies of the type discussed rarely exceed 25 per cent, so that the loss is usually nearer four times the above, or 1428 tons. This introduces the interesting side light that the poorer the efficiency of the apparatus, the greater is the monetary loss from no, or defective insulation.

Of course, hardly any refiner would leave the still surface bare, but many poor insulations have been used. Because of the comparatively high conductivity of some of these materials and infiltration of air through joints, there is still a large heat loss that is well worth saving. Almost any insulation will cut down the enormous loss from bare surfaces, but an efficient covering will save as much as 95 per cent of the total heat loss and by so doing usually pays a handsome return upon the additional expenditure for the superior job.

Poor Insulation

For example, a form of insulation too often used is 4 inches of common brick or hollow tile. There is little to choose between them. From the previous example, it was shown that the bare still had a loss of 8,300,000,000 B.t.u. per annum. This is equivalent to 1188 tons per annum with 14000 B.t.u. coal and 25 per cent still and furnace efficiency. The brick or tile job will save about 82 per cent of this when new.

As interstices develop, this efficiency falls off and it is doubtful whether as much as 60 per cent of the heat loss may be saved. Still insulation of 95 per cent will save 1128 tons per annum, which at $4.00 is equivalent to $4,512.00, at an installation expense of approximately $750.

The inferior job will cost at least $350 for a saving of about $3,900, and this saving is only possible when the covering is new. Therefore, right at the start, we have an added saving of $612 per annum for an added cost of $400 which represents an excellent return on the extra investment. As times goes on, the poorer job deteriorates so that the figures are even more in favor of the high class insulation.

Several of the better grades of insulation will save 80 to 95 per cent of the loss from the bare plates. They should possess further qualities than insulating efficiency alone. Resistance to decomposition by the heat, freedom from excessive expansion or contraction under temperature changes, mechanical strength and a weather proof surface, are all essential.

Often the most efficient insulator, for instance, will not stand the temperature encountered, so that another material must first be applied to the still followed by a layer of the better insulating medium.

Insulating Furnaces

For the furnace, there are several methods of reducing losses. A course of brick of insulating material is sometimes interposed between fire and red brick. Care should be observed to see that the coefficient of heat expansion

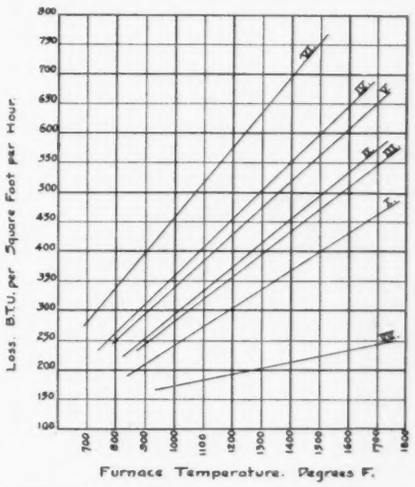


Figure 2.—Heat losses from furnace walls.

Wall No.	Fire brick	Common brick
I.	18 in.	8 in.
II.	18 in.	4 in.
III.	13½ in.	8 in
IV.	13½ in.	4 in.
V.	9 in.	8 in.
VI.	9 in.	4 in
VII.	No. IV. with insulation.	

does not differ too greatly from the other brickwork to which the insulating layer is bonded.

Otherwise, mechanical difficulties in holding the setting will follow. For this reason, some prefer a powder placed in a space between the two kinds of brick. Some interesting work has recently been done in the application of the insulation to the outside of the walls.

One large public utility company has gone so far as to eliminate the common brick facings entirely, placing the insulation directly on the fire brick furnace linings, with good results. This method of insulation is particularly interesting to oil refiners as it can be applied directly to old still and boiler settings at nominal cost.

The remarks covering stills will apply also to boilers and their settings. The usual refinery boiler will not, however, present such extremes of temperatures, but will on the other hand, operate practically continuously. The pressure still problem is also similar, but with higher temperatures. Particular attention to calcination, expansion and durability should be given to stills of this class.

Cracking stills present no complications over the ordinary still, except that the temperatures encountered of 750° upwards are higher with consequent necessity of greater care in the selection

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of material. These temperatures are liable to cause excessive shrinkage with some insulating mediums and calcination with others. It often follows that materials that calcine at the higher temperatures show a tendency towards shrinkage with loss of strength and consequent cracking.

Steam stills, on the other hand, operate at lower temperatures, and less insulation is well in order.

More and more attention is being paid today to proper fractionation and many different types of towers and dephlegmators have been proposed and used. Some such simple dephlegmators depend, of course, entirely upon radiation for their effect. Without entering into the theory of dephlegmation and fractionating, it may be stated that such devices cannot be as efficient from any angle as one in which the temperature can be controlled.

Atmospheric conditions are constantly changing with consequent fluctuation in the results from the dephlegmator. It is believed that the future development will be along the lines of apparatus which, by means of direct contact or controlled cool surfaces, will be able to control the results.

If such control is desired, the apparatus must be as free as possible from atmospheric conditions and hence be well insulated. The temperatures encountered will be under those experienced with stills and the insulation should be selected for the maximum efficiency compatible with structural strength and durability.

Searle Takes Position With Elliott Jones

HOUSTON, March 22.—R. A. Searle, for four years sales manager of White Oil Corp., Houston, Tex., and previous to that time assistant sales manager of the Pure Oil Co., Columbus, O., will become associated in a sales and advisory capacity with Elliott Jones & Co., Inc., of San Antonio, Tex., effective March 15.

Elliott Jones & Co. are installing complete equipment for turning out a full line of zero cold test, red and pale oils, which will be manufactured from a crude which is now being produced in the Three Rivers, Tex., field.

Elliott Jones & Co. expects to begin commercial operation on their new installation about March 15, and it is anticipated that products will be ready for distribution to the trade not later than April 15.

CHICAGO, March 21.—Refiners Petroleum Co. of Chicago, in which R. A. McCormack and L. A. Stewart are active, plans to move its offices to the Peoples Gas Building, 122 South Michigan ave., Chicago. The change is to get more room to take care of the increase in business. The firm probably will not leave its office at 220 South State street before April.

Bills Aim To Harass Oil Industry

By Special Correspondent

WASHINGTON, March 21.—A vigorous demand for "less federal harassment" of the oil industry was made before the House Rivers and Harbors Committee last week by Representative Howard of Oklahoma (Democrat) in opposing the new Wilson anti-oil pollution bill.

Introduced by Representative Wilson of Louisiana to remedy local conditions in that state, the new bill is by far the most drastic of the score of measures on oil pollution now pending before Congress. Instead of confining regulations to prevent the pollution of "coastal navigable waters," the Wilson bill would extend federal supervision to any non-navigable river or stream flowing into a navigable river or its tributary.

Representative Wilson is seeking to impose this drastic regulation on the entire oil industry of the country to prevent the pollution of water at Monroe, La., by oil draining from the Arkansas fields into the headwaters of the Ouachita river.

"On every hand," said Howard, "there seems to be an inclination by men in and out of Congress to harass the entire oil industry because a few oil companies are mixed up in the 'oil scandal.' The time has arrived when, in the interests of producer and consumer, we should treat this industry as a deserving class instead of as an industry under governmental suspicion."

He declared the 16,000 firms, corporations and partnerships in the industry are producing 725,000,000 barrels of crude oil annually and "not four per cent of that amount was produced by oil companies that have been involved in the oil scandals engaging the attention of the country at this time."

Stating that the growing tendency of governmental interference with every industry "is a cancer on the body politic which should be stopped," he urged the committee "not to put an oppressive burden on the entire oil industry of the United States to clear up a local condition in Louisiana which the state of Arkansas can stop in 24 hours by the enactment of a state conservation law."

"I do not object to reasonable regulation to prevent the pollution of navigable rivers, but when Congress seeks to spread this regulation to every little stream or hill creek in the country, that is unreasonable legislation which ought never to be enacted. This means simply more federal interference."

To make the legislation effective, Howard contended, would require an "army of inspectors to enforce regulations at each well," and a duplication of the regulations now enforced in many states. "The result would be that in every state where a new well is drilled a federal inspector would have to be on hand; oil companies would be put to the additional expense of making out continuous reports and taking unnecessary precautions, wherever there is a creek nearby," he added.

In addition to being a "source of constant harassment to the entire industry," he protested, the expense involved would inevitably tend to make the cost of crude oil higher, for which the farmer and the city consumer would have to pay.

Howard cited conditions in the Burbank and Osage fields in Oklahoma, under state regulation, to show that oil pollution can be successfully curbed without federal regulation. "There are over 1000 wells drilling in Oklahoma," he protested, "and if this bill becomes effective, an army of government inspectors would descend on the state. Instead of improving conditions it would make matters worse for by the time the government and state inspectors settled their differences, the drainage would have occurred. As conditions are now in Oklahoma, the state can do its own regulating without the need of federal inspection."

Howard's opposition to the Wilson bill made a decided impression on members of the Rivers and Harbors Committee, though there is a strong feeling in the committee that Congress should enact an anti-oil pollution bill to regulate the drainage of "B.S." oil in navigable rivers and coastal waters.

Rep. Lineberger of California has offered a bill providing for an investigation of the entire subject by a Commission, which Mr. Howard told the committee he favored.

Would Put Tax Hound On Trail

TULSA, March 21.—Two bills under consideration by the Oklahoma legislature are disturbing the peace of mind of the oil industry because of their possibilities for future harassment.

Senate Bill No. 147, provides for a state tax ferret who is to be given 15 per cent of all taxes he digs out of corporations.

Senate Bill No. 95, is a companion measure which requires all domestic and foreign corporations to make a complete yearly report of all activities to the State Corporation Commission. The bill demands that the company report its payroll in the state, earnings, dividends paid, capital employed, goods on hand and numerous other details.

It is pointed out that the bill is designed to give the tax ferret ammunition with which to shoot the reporting companies.

TULSA, March 15.—Dr. C. N. Gould, of Oklahoma City, formerly Oklahoma state geologist, will deliver a paper here tonight before the meeting of the Tulsa Geological Society. His subject will be the "Red Beds of Western Oklahoma."

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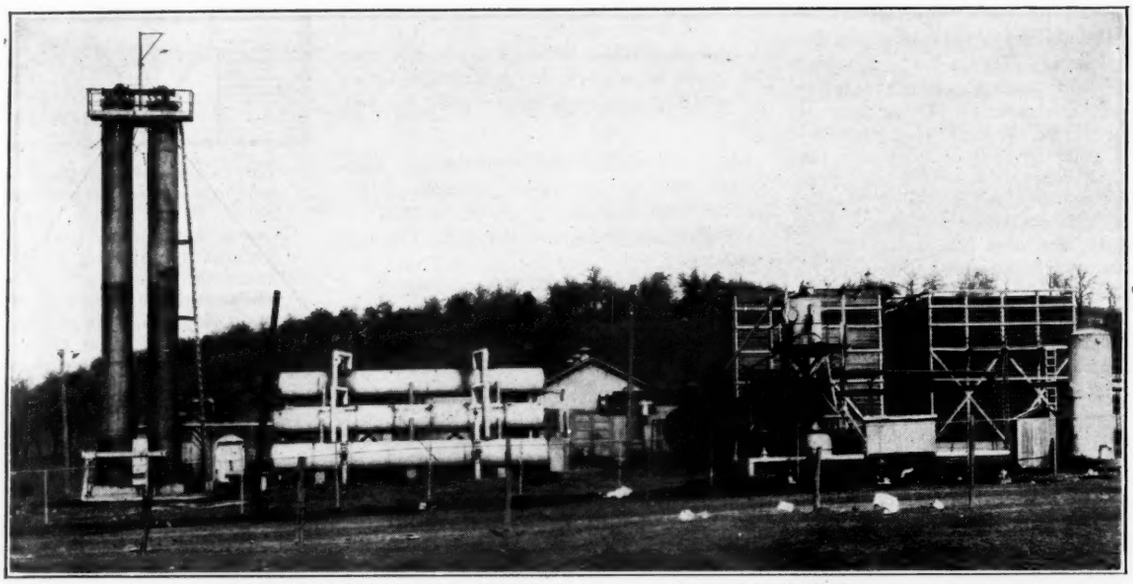

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Report On Teapot Dome Navel Reserve No. 3, Natrona County, Wyoming

By Frederick G. Clapp,
Consulting Geologist, New York

WHEN the Senate committee on public lands and surveys approached the problem of investigating leases upon naval reserves, it was decided to employ two geologists who were in no way connected with the previous investigations of Teapot Dome to study several of the moot phases of the question.

The men appointed for this purpose were Frederick G. Clapp, of New York, and James O. Lewis, of Tulsa. They worked separately for the greater part of their surveys and submitted independent reports.

The necessity of having such survey of the field made is apparent when it is considered that one of the points of controversy, frequently expressed after the Mammoth Oil Co. contracted to drill Teapot, was whether the reserve was actually being drained by wells in the adjacent Salt Creek field. The point was of first importance, as it was one and the principal of the reasons advanced by the Department of the Interior for opening the reserve to development.

In some early reports on the reserve area the conclusion was drawn that a water barrier existed between Salt Creek and Teapot fields which sealed off the oil in the latter, making it impossible for Salt Creek wells to drain the reserve. There was considerable difference of opinion on this point, but drilling has demonstrated that drainage was taking place prior to the drilling of offsetting protective wells. Mr. Clapp's report discusses this in detail and he asserts that the fact could have been established definitely in advance of development.

The controversy over the leases, which has brought out a volume of testimony and rumor, much of which is not at all pertinent to the main issue, will presently be a part of history, as those things have a habit of becoming. There is an economic question which is of interest to the oil industry, however. That is the question of what may be expected from Teapot in the future. Undoubtedly some form of operation will be carried on, for the question of drainage is as vital now as it was before. There is a part of Teapot which is a good oil field, compared to many others which are profitably operated. The failure of Teapot is a matter of comparatives—the comparison being the high estimates originally placed on the field and the scope of the development campaign which was undertaken.

There is a developed production of around 4000 barrels a day at this time. The further possibilities of the field with respect to oil and gas are set forth in some detail by Mr. Clapp and it is this phase of the report that is of greatest interest to the oil industry.

Mr. Clapp's report as presented here is greatly abridged. It is regretted that it was impossible to publish it in full, but such publication would fill a great many pages in a periodical of this size. All that could be accomplished, therefore, was the printing of Mr. Clapp's most important conclusions. The detailed reasoning and technical analysis back of the conclusions must be disposed of here with the statement that it was arrived at by careful and painstaking work on the ground and the utilization of all available information bearing on this and similar problems.

The accompanying portion of Mr. Clapp's report is taken from the Senate record of the investigation and the illustrations are copies of the originals which form part of the report.—Lawrence E. Smith.

Summary of Findings

1. AN ESTIMATED area of 2,300 acres in the Reserve will prove oil-bearing and 1400 acres gas-bearing, while the balance, amounting to about 5600 acres, will be barren of oil or gas in every known producing formation. I estimate that 1600 acres, or 70 per cent, of the estimated oil-bearing area, are susceptible to imminent drainage or reduction of the percentage of recoverable oil by wells drilled in the adjoining edge of Salt Creek field and that about 30 per cent of the oil-bearing area is insusceptible of such drainage or reduction to any commercial degree.[1]

2. The fundamental geologic relations of oil in Teapot field are similar to those existing in other fields, and in this field as elsewhere, water and natural gas bear a definite relation to structure and to the oil.

3. In the adjoining Salt Creek field two principal producing strata exist, but in Teapot field only one "sand" is productive. The principal problem is at present confined to the Second Wall Creek "sand."

4. An important factor is the question whether the Teapot structure is a spur of Salt Creek or a separate dome. This question is not a mere technicality; because, although Teapot and Salt Creek fields are continuous, they nevertheless cover separate domes in the Salt Creek anticline. The combined structure may properly be called an "anticline" and the component Teapot and Salt Creek structures individually may just as correctly be termed "domes."

5. Another important factor is the position of the "edge water" line—or the contact between oil and surrounding water—in the "saddle" between Salt Creek and Teapot domes, but the supposed presence of water in the "saddle" to the exclusion of oil was a myth. Although the domes form two distinct structures, the Second Wall Creek or principal producing "sand" is filled with oil between them—not with water as was predicted by some persons.

6. In Salt Creek field water has already encroached on the originally productive area of the First Wall Creek "sand," and this fact, together with the habitual encroachment of water in other fields of similar structure, constitutes evidence that sooner or later during the process of oil exhaustion encroachment will ensue in the Second Wall Creek "sand" of the Salt Creek-Teapot field, commencing in the "saddle," but later dividing the reduced body of oil and creating two separate fields where a continuous one now exists. This stage will be an effect of exhaustion rather than an element of it, and when it en-

[1]The figures have been re-calculated with greater accuracy since transmitting my preliminary report dated July 14, 1923. In that report the term "depletion" was used to express the idea here described as "reduction in percentage of recoverable oil."

sues it will indicate that the fields are greatly depleted.

7. Gas pressures in any field are reduced by the production of gas or oil from oil or gas wells in the same field. Recovery of oil is related to the pressure of natural gas associated with the oil, and exhaustion of oil is accompanied by reduction of gas pressure, so that production of oil from the "saddle" and adjoining area is even now inevitably resulting in reduction of gas pressure in Teapot field. Consequently, wells in Salt Creek field adjoining the Naval Reserve are reducing the percentage of recoverable oil from Teapot dome or will soon be reducing it as far south as the Second Wall Creek "sand" body is continuous.

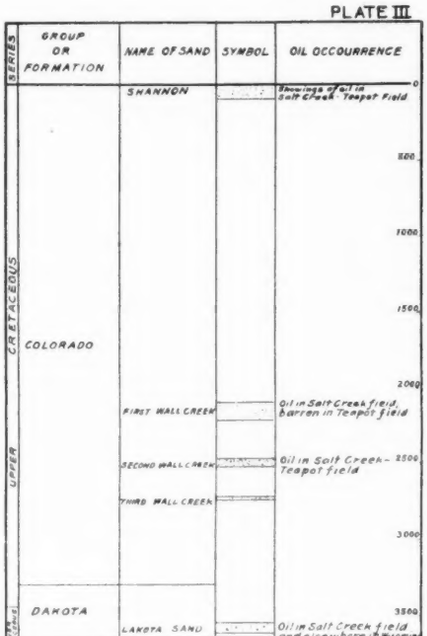
8. No barrier exists in the "sand" body north of the middle east and west line through secs. 33 and 34 but this line roughly constitutes the southern boundary of 1600 acres of probable oil territory or 70 per cent of the oil-bearing area of the Naval Reserve which would be drained by or the percentage of recoverable oil reduced on account of Salt Creek wells even though Teapot dome had never been drilled.

9. The barrier in secs. 33 and 34 is demonstrable geologically. It is a fault of sufficient displacement to completely sever the Second Wall Creek "sand" along a definite line or narrow zone. This fault appears to extend entirely across the field with a displacement continuously greater than the thickness of the "sand," to continue downward from the surface to the "sand" with undiminished displacement and is probably "sealed," thereby very greatly retarding migration of oil across it if not preventing migration altogether. In short, little or no appreciable drainage of oil can take place from the south side of this fault toward wells drilled anywhere north of it and the percentage of recoverable oil south of the fault can not be greatly reduced by such wells.

10. Although drilling of wells has rendered the evidence clearer than before drilling of the Reserve commenced, as to the susceptibility of approximately 70 per cent of the oil-bearing area of Teapot dome to drainage or reduction in the percentage of recoverable oil owing to wells outside the Reserve, nevertheless such susceptibility was demonstrable, to the extent of 43 per cent of the total oil-bearing area by making careful detailed geological studies before the execution of the Naval Reserve lease. About 30 per cent of the oil-bearing area of the Reserve remains insusceptible of drainage or reduction of recoverable oil in any commercial degree; and this limitation to serious drainage or reduction was likewise approximately ascertainable before the execution of the lease.

11. The actual area of oil occurrence in Teapot dome is very different from that anticipated when the Naval Reserve lease was executed in 1922 and still different from what was expected at the time of creating the Reserve in 1915. Whereas, in the last mentioned year only the First Wall Creek "sand" was known, the Second Wall Creek "sand" has since been discovered; but the First "sand" is barren under 80 per cent of Salt Creek field and under all of Teapot field. The Second "sand" is expected to prove productive of oil only under about 2300 acres of Teapot field but productive of natural gas under 1400 acres.

PLATE III



SECTION
SHOWING OIL SANDS
UNDERLYING
SALT CREEK-TEAPOT FIELD
WYOMING

By Frederick G. Clapp
July 1923

This surprising condition could not have been known in advance and is one of the risks of the business of oil production.

12. Rough estimates give an average of 26,000,000 barrels as the probable oil content of the Second Wall Creek "sand" in the Naval Reserve, of which 16,600,000 barrels may be expected north of the principal fault barrier and susceptible to drainage or reduction in the percentage of recoverable oil on account of drilling outside the Reserve.

13. Although some oil may exist below the Second Wall Creek "sand," the production of deeper "sands" is problematical. They are very deep and the expense attending development would be likely to discourage their exploitation under any lease of less scope than the present one. Nevertheless, they will certainly be drilled in the course of time.

14. Some sort of leasing of the Naval Reserve was necessary. Possible alternatives to the present lease exist, but physical conditions are such that the present one appears to offer as many points of wisdom, if not more, than would the suggested substitutes with one possible exception.

15. Since a fault barrier passes through secs. 33 and 34 and since about 70 per cent of the probable oil-bearing area lies north of the barrier, another plan, which the discovery of gas indicates would have been a wise one, would have been to lease the portion of the Reserve north of that barrier separate from that south of it. Other sources of some profit in the field are natural gas and gasoline from natural gas. The natural gas content is estimated at over 33,000,000,000 cubic feet reduced to atmospheric pressure.

Article 3

What Formations Hold Oil in Salt Creek-Teapot Field?

Every field has characteristics as to producing formations. In Salt Creek field two principal producing strata exist—known from top downwards as the First and Second Wall Creek "sands"—whereas in Teapot field only the Second Wall Creek "sand" is productive. The Shannon sandstone, lying closer to the surface, contains such a small amount of oil in both fields as to be almost negligible commercially, while the Lakota sandstone has only been reached in a single well (situated in the center of Salt Creek field) and the future of the Lakota as a producer is problematic. The main problem is confined to the Second Wall Creek "sand" since it is the only known oil-bearing formation in Teapot field, aside from shale, which is not important in the principal problem.

(a) Oil in Shannon sandstone. The Shannon "sand" forms a continuous escarpment between the center of Salt Creek dome and its outer rim but it is under cover in Teapot dome. Several wells, 300 to 500 feet deep, were drilled to the Shannon "sand" in Teapot dome and had initial productions (not verifiable by me) reported as 3 to 10 barrels per day, not considered of commercial importance.

(b) Oil in First Wall Creek sandstone. The nearest outcrop of the First Wall Creek "sand" is in Tisdale dome about 10 miles northwest of Salt Creek field and the outcrop continues many miles north into Johnson County. The "sand" is also exposed on Emigrant Gap anticline a few miles west of Casper. Past and future production of the First Wall Creek is limited to an area of less than 4500 acres in the center of Salt Creek field, comprising about 130 productive wells. This "sand" is barren or saturated with water in Teapot dome, but is important in the present investigation for several reasons. Its average thickness is 135 feet and the minimum depth is 1000 feet. In Teapot field the thickness of the "sand" ranges from 90 to 175 feet and its minimum depth is 2400 feet. In Salt Creek this "sand" has pro-

duced from 5 to 4000 barrels of oil per day from a single well.

(c) Oil in Second Wall Creek sandstone. The first well to reach the Second Wall Creek "sand" (or "Lower Wall Creek," as it was first called) was completed in 1917. Since that time it has become the principal producing formation of Salt Creek field and the only important "sand" in Teapot field. Its productive area is about 32 square miles val Reserve includes less than 2 square miles. The average thickness of the Second "sand" in Salt Creek field is 60 feet, but in Teapot field it ranges from 28 to 65 feet and has an average of 50 feet. Its average depth in Salt Creek field is 1600 feet, and its production for a single well is from 30 to 13,000 barrels per day. In Teapot field its minimum depth is about 2750 feet and its initial productions to date have been from 30 to 3300 barrels per day. As in the case of the First Wall Creek, the nearest outcrop of the Second "sand" is in Tisdale dome, 10 miles west of Salt Creek field and 15 miles northwest of Teapot dome.

(d) Oil in Lakota sandstone. In Salt Creek field a well drilled by Midwest Refining Company (No. 7A in SE ¼ sec. 25, T. 40, R. 79) found 300 barrels of oil per day in the Lakota "sand," accompanied by considerable water at a temperature of 122° F. The oil was encountered 38 feet from the top of the "sand," which is 1050 feet below the top of the Second Wall Creek. Although the top of the Lakota was 2570 feet from the surface, places exist in Salt Creek dome where it may be 300 feet shallower. In Tisdale dome some oil has been found at a shallow depth in the Lakota and this "sand" contains oil in small quantities in a number of Wyoming fields.

Article 7

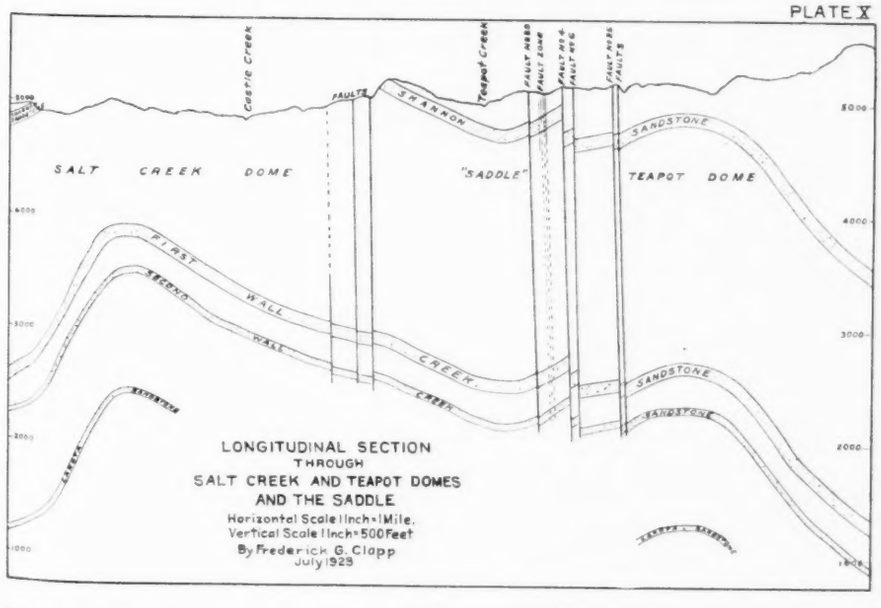
Will "Edge Water" Encroach on the "Saddle" and on the Domes?

(a) Bearing on the principal problem. I have considered carefully whether "edge water" will encroach on Salt Creek-Teapot field and particularly whether it will encroach on the "saddle" owing to exhaustion of oil or reduction of gas pressure because of wells drilled in the adjoining portion of Salt Creek field, and I find abundant evidence that it will.

(b) Evidence afforded by "Edge water" encroachment in other fields. In practically all fields which have a definite "edge water" line a stage comes when a large amount of oil has been extracted and gas pressure has been reduced to such an extent that "edge water" appears in wells inside its previously existing line, gradually encroaches farther toward the center of the field and increases in percentage until some fields are entirely drowned by water. A field is not necessarily penetrated by water to its center but such may be the case. Among fields seriously injured in the past by water are those of Homer (Louisiana), Mexia (Texas), Hogshooter (Oklahoma) and several fields in California.

(c) Evidence afforded by encroachment in First Wall Creek "sand." One need not go far afield to find evidence for encroachment of "edge water" during exhaustion of oil, as the First Wall Creek "sand" area of Salt Creek field furnishes positive evidence. The facts regarding it are so definite that the amount of encroachment can be accurately mapped and has been mapped by Kenneth B. Nowels, of Midwest Refining Co. in connection with an unpublished manuscript. His map is not before me, but I have prepared Plate XI to illustrate the encroachment. After interpreting the geological structure from logs furnished by the companies, the encroachment data were platted from the results of tests made by J. C. Snook for William Fitzhugh in 1914 and from data furnished by Midwest Refining Co. covering the years 1921 and 1922, revised by additions to March, 1923. The figures show variation in percentage of water in individual wells from a few per cent up to 100 per cent.

PLATE X



The water encroachment now amounts to 100 to 150 feet structurally and covers a lateral distance of one-eighth to one-half mile and an area of 1150 acres. On Plate XI the outside limit of the shading is taken from the "edge water" line mapped by Wegemann[1] in 1918, whereas the inner line is the 100 per cent line of water encroachment taken from the above-mentioned records, or the line at which wells have been or must be abandoned. The first well abandoned on account of "going to water" was No. 28 in SW ¼ Sec. 13, T. 40, R. 79, abandoned in the winter of 1922 to 1923 after having produced since 1912.

(d) How will Second sandstone "edge water" encroachment affect recovery of oil in the domes and in the "saddle?" The drowning of the First "sand" is not an exceptional instance, but the same thing is sure to happen in the Second "sand." Wegemann[2] acknowledged that water will encroach and invade the oil-bearing sand during production of the oil and reduction of gas pressure.

I am advised by E. L. Estabrook, production engineer of Midwest Refining Co., that the only wells with which he is familiar which have shown water in the Second Wall Creek "sand" where such water did not exist originally are the Duthie wells on the east side NE¼ NW¼ sec. 3, T. 39, R. 79, completed in March, 1920 and January 1921. Everyone familiar with the situation admits that water encroachment will certainly ensue in the Second "sand," though differences of opinion may exist as to the amount of encroachment.

With the mode of encroachment likewise little difference of opinion is likely to exist. Since the "edge water" level is now within 50 feet structurally of the low point of the "saddle" and since the dip of the formations is slight, the "saddle" will doubtless be the first part of the structure drowned, separating the reduced bodies of oil in the two domes and creating two separate oil pools where a continuous one now exists. This stage will be a result of water encroachment rather than an element of it, and when it comes it will indicate that the oil is much reduced in volume and the accompanying gas reduced in pressure.

Article 9.

To What Extent is it Demonstrable that Adjoining Salt Creek Wells Will Drain Oil or Reduce Percentage of Its Recovery in the Naval Reserve?

(a) Bearing on the principal problem. I have shown (1) that the Teapot structure constitutes a dome on the Salt Creek anticline, (2) that the Second Wall Creek "sand" surrounding the anticline is saturated with water, (3) that this "edge water" will encroach on the field according as oil is exhausted, (4) that oil moves toward adjoining Salt Creek wells owing to conditions existing in the Naval Reserve and that (5) reduction of gas pressure consequent on

[1]U. S. Geol. Survey, Bull. 670, Pl. II.

[2]Senate Doc. 210, 67th Cong., 2nd Sess., 1922, pp. 36-37.

oil development will prove the principal factor in reducing the percentage of oil recovery. I am now ready to consider how far oil would be drained or its recovery prevented owing to oil production in neighboring wells of Salt Creek field if the Naval Reserve had not been drilled. The answer is that the percentage of recoverable oil would be reduced just as far south as the Second Wall Creek "sand" body is continuous but no farther. It is necessary, First, to inquire how far wells do drain and cause reduction of recoverable oil in other oil pools and, Second, to apply the lessons learned elsewhere to this particular problem.

Heald believed[2] that a year or more must elapse "before any part of the reserve" would be appreciably damaged; but drainage which takes place a year from date is imminent in the cycle of oil development and steps should be taken a year ahead to prevent it.

For two days in March, 1923, the Salt Creek Operators' Association held sessions to consider what could be done toward averting drainage of parts of Salt Creek field by wells drilled on adjoining portions of the Naval Reserve. Thus practical men of the Salt Creek field formally acknowledged that drainage would take place across the Reserve boundary line.

(b) Distance through which wells interfere in fields where reduction in percentage of recovery owing to neighboring wells has been demonstrated. A matter of common knowledge to specialists in oil problems is that producing oil wells may reduce the percentage of recovery in distant parts of a field provided time and texture of the "sands" permit. Nevertheless demonstration may be required for persons of other professions who obviously can not be familiar with such details. For that reason I make no apology in citing instances of such interference outside the Salt Creek-Teapot region which have been selected as applicable, and where the "sand" conditions are considered broadly similar. Since the problems relating to oil, gas and water content are independent, a statement regarding migration or movement which is applicable to one of these fluids applies to the others to a certain extent. Natural gas is the most rapid of them all in moving from point to point in a sand and may logically be considered first.

Since the flowing of an oil well is due largely to gas pressure, no imagination is required to understand that reduction in the percentage of recoverable oil is largely proportional to the decline in pressure of the gas exhausted with the oil. The length of the possible productive area of Teapot dome is no greater than was the distance between the two wells cited in the Burbank field. Hence a gas well or one from which gas is produced with oil at the northern border of the Naval Reserve would exert a similar effect on wells in the southern part of Teapot dome, if no barrier existed to free movement of gas and oil through the "sand."

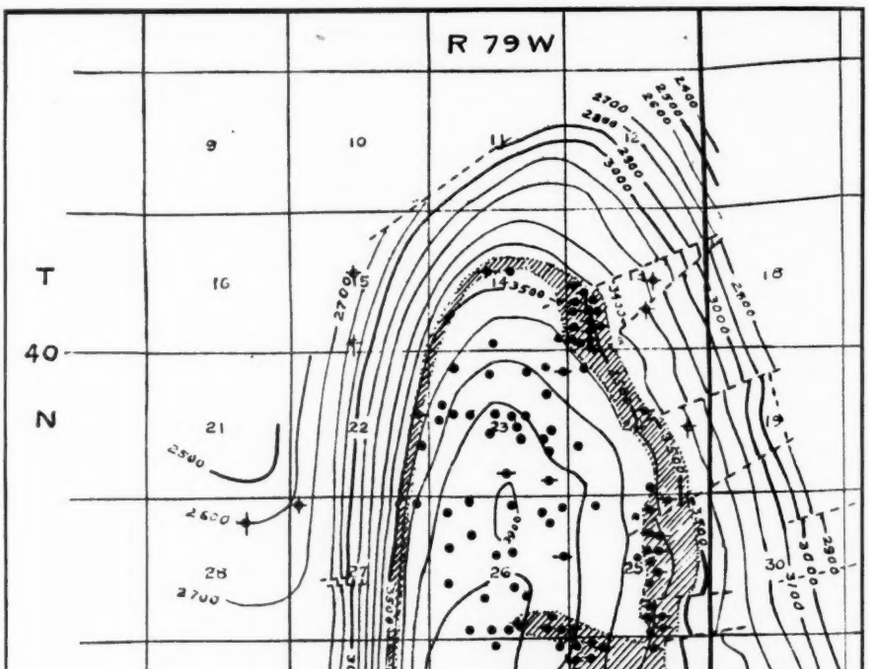
(c) Distance through which wells may interfere in Teapot field. The Second Wall Creek "sand" can be assumed to have about 20 per cent porosity; the gas pressure is 950 to 1425 lbs. per square inch, and hence every facility exists for migration of oil through the "sand" under influence of the gas associated with it. Therefore oil will inevitably move towards the boundary of the Reserve according as the pressure in the "saddle" declines owing to exhaustion of oil. The movement will not mean actual transference of the greater part of the oil from south tc north, but will mean that some oil will move north in conjunction with the movement of gas in that direction and the balance of the oil will be recoverable only to a reduced extent owing to the reduction of gas pressure.

The next question is: From how far south will the reduction take place? The answer is that it will move from as far south as the Second Wall Creek "sand" body is continuous. If the "sand" extended without interruption to the south end of the field, the recoverable percentage of oil throughout the field would be reduced, but if the "sand" contains a barrier anywhere, the reduction will extend south only to such barrier but no farther. The following Article will discuss such barriers as might exist.

Article 10.

What Kinds of Barriers, if Any, May Exist Between Salt Creek and Teapot Fields or in Teapot Field

The kinds of barriers that might be conceived to exist in a "sand" like the Second Wall Creek are limited to (a) Water barriers, (b) Locally tight or impervious portions of the "sand," (c) Ig-



Shaded area represents the encroachment of water in the First Wall Creek sand in Salt Creek field. Water has encroached to most intensively developed part of the field in this sand as the result of exhaustion of oil.

[2]Heald, K. C., U. S. Senate Doc. 210, 67th Cong., 2nd Sess., 1922, p. 37.

neous dikes or veins, and (d) Fault barriers.

(a) Water barriers. No barrier of water exists between Salt Creek and Teapot domes and the evidence, even in advance of drilling, did not favor such a barrier. Although slight irregularities doubtless exist in the "edge water" line of the domes, they are not important. Many wells in the "saddle" report water in the bottom of the "sand" but no water pockets of magnitude are known. Consequently no possibility exists and no probability existed of a water barrier between Salt Creek and Teapot fields or in Teapot field, except possibly along some major fault. The possibility of the last-mentioned circumstance is contingent on the existence of such a fault; but my study of the "edge water" line did not reveal any water barrier along a fault.

(b) "Tight" or impervious portions of the "sand." Oil men speak of locally unproductive "sands" in certain parts of the country as "tight," "spotted" or "pinching out," signifying that the "sands" are locally impervious and do not consistently carry oil. "Spotted" sands are not common in Wyoming fields, and the Wall Creek "sands" are so persistent, have such a considerable thickness and are commonly of such porosity that they seldom pinch out within the limits of a single field and are not known anywhere to be sufficiently impervious to entirely interrupt migration of oil through them. In a few spots in the southern part of Salt Creek field the Second "sand" is of such character as only to carry a small quantity of oil; but this feature is local and forms lean spots—not any continuous barrier in the field. Nothing in the character of the Second "sand" anywhere in Salt Creek field or Teapot dome indicates any impenetrable barrier in the "sand" itself.

(c) Igneous dikes or veins.—If dikes, or wall-like masses of igneous rock, existed in the Salt Creek-Teapot field, they might constitute barriers to migration of oil and gas, but dikes do not exist in these fields. Thin mineral veins exist, they might interfere with migration and are considered in connection with faults. Veins may exist without displacement, but in this field I have never seen them continuous for more than a few feet except in connection with displacement. No evidence exists of a mineral vein barrier in the field.

(d) Fault barriers.—There are, therefore, no barriers in the field except faults, and I come to faults as constituting a geological feature that may reasonably be expected to form barriers if any exist in Teapot field. After exhaustive study of faults in the critical area (area from the "saddle" south more than 2 miles), my conclusion is that no interruption exists between the "saddle" and the middle east-west line through sec. 33. At that place, however, a fault of first magnitude (among faults of the Salt Creek-Teapot field) cuts the structure and severs the second "sand" completely from top to bottom, preventing (or at least greatly interfering with) migration of oil or gas from south to north across the faults. This line delimits 2½ miles of distance and 1600 acres of probable oil-bearing area, or 70 per cent of the total oil-bearing land of the Naval Reserve, that would be drained or the percentage of recoverable oil reduced owing to Salt Creek wells if Teapot dome had never been drilled.

Article 12.

How Much of Naval Reserve No. 3 is Susceptible to Drainage or Reduction in the Percentage of Recoverable Oil?

(a) Preliminary remarks. The area of Naval Reserve No. 3, as created April 30, 1915, was 9481 acres. From this 160 acres were subsequently excluded on account of being State Land, leaving a balance of 9321 acres as the area leased to Mammoth Oil Co. on April 7, 1922. I will now consider what part of the Reserve would be susceptible to drainage or reduction in the percentage of recoverable oil on account of wells drilled outside the Reserve if the latter had never been drilled and in the light of conditions set forth in Articles 2 to 11 inclusive.

In considering what portion of the Reserve would be affected by wells outside the Reserve we can rule out (1) such portion of the Reserve as is evidently barren of oil or gas, (2) the portion in which the "sand" carries gas instead of oil and (3) the oil-bearing portion south of Fault No. 4.

(f) Total oil-bearing area and classification of acreage. Considering now the estimated oil-bearing area south of Fault No. 4 plus that north of it, we have 2300 acres as the probable figure. Thus the classification of territory in the Naval Reserve, according to its production, is as follows:

Table VIII.—Classification of land in Naval Reserve No. 3

Classification	Area in acres	Per cent of total
1. Barren of oil or gas	5,600	60
2. Gas bearing	1,400	15
3. Oil-bearing area south of fault No. 4	700	8
4. Oil-bearing area north of fault No. 4	1,600	17
	†9,300	100

†Approximate.

Article 13.

How Much Oil Exists in the Reserve and How Much of it Would Have Been Unrecoverable Owing to Developments in Salt Creek Field if the Naval Reserve Had Not Been Leased?

(a) Published estimates. Estimates have been made from time to time of the probable amount of oil in Teapot field. Among these it is not necessary to mention that in Bulletin 670 of the Geological Survey which referred to the First "sand" only. A former Secretary of the Interior assumed[1] on August 1, 1917, writing to D. F. Houston, then Secretary of Agriculture, that Naval Reserve No. 3 (misprinted No. 2) contained 30,000,000 barrels of oil. Ambrose estimated the Second Wall Creek "sand" in the Salt Creek field to have 5000 acres of perhaps 25,000 barrels of oil per acre and 10,000 acres of about 5000 barrels per acre. On February 18, 1922 the same writer arrived at 15,000 barrels as an average estimate of the oil per acre in Teapot dome; and, expecting a probable productive area of 5670 acres, he predicted 85,050,000[2] barrels as the probable production of the Second Wall Creek "sand" in Teapot dome. My own estimate is nearer that of Lane than of Ambrose.

(b) Production of Salt Creek field. According to United States Geological Survey and Midwest Refining Co. the production of Salt Creek field up to January 1, 1923 was approximately as follows:

Table IX.—Production of Salt Creek Field

Year:	Production (barrels)
1911	52,248
1912	951,045
1913	2,254,946
1914	3,379,329
1915	3,936,319
1916	4,000,433
1917	3,840,502
1918	5,512,593
1919	6,208,358
1920	10,254,410
1921	12,378,689
1922	19,260,876
Total	72,029,748

(c) Production of oil in Naval Reserve. The production statistics of the Naval Reserve up to July 1, 1923, as supplied by Mammoth Oil Co. and reclassified by me for the present purpose are summarized in table X on the next page.

(d) Usual appraisal methods in use and the unusual conditions prevailing in Salt Creek field. In estimating the quantity of oil in Teapot dome various methods of oil appraisal used in other fields must be considered and discarded as unsuitable. Accurate results require the molding of methods of procedure in accordance with the particular data available. In appraisal of a normal field, decline curves would be prepared of leases or land divisions and of separate wells where possible, the rate of decline for various portions of the field would be established and finally curves would be drawn to show future and total productions based on a study of the actual declines. In modern appraisals of oil properties such curves have been prepared in most fields, and this process is susceptible of a high degree of accuracy where development has proceeded steadily for a number of years over the whole field.

At Salt Creek conditions are quite different. Pipe line facilities were for several years inadequate to transport all oil produced, and for that reason Midwest Refining Co. prorated the oil it would take, much of the time only

[1]Lane, Franklin K., U. S. Senate, Doc. 210, 67th Cong., 2nd Sess., 1922, p. 55.

[2]Ambrose, A. W. U. S. Senate, Doc. 210, 67th Cong., 2nd Sess., 1922, p. 41.

drawing 30 to 40 per cent of the oil from producing wells. Manifestly, accurate decline curves can not be constructed. Other complications ensue because the properties are part of the Public Lands of the United States, subject originally to the Placer Mining Law and since 1920 to the oil land Leasing Bill, and therefore large tracts were not drilled until years after the discovery of oil on adjoining sections. Tracts not drilled early were subject to a similar disadvantage to what would have ensued in the Naval Reserve had it not been drilled soon after the adjoining Salt Creek wells; i. e., some of the larger producing leases in Salt Creek field have drawn large amounts of oil for years from other lands not under lease. In view of these facts, an appraisal by ordinary methods of employing production curves would not be at all accurate.

(e) Estimates by "production by acre" method. In roughly estimating the oil in the Naval Reserve, I have therefore reverted to the "production per acre method." After studying results of wells in Salt Creek field and considering certain differences in conditions, such changes have been made in the number of barrels per acre realized in other fields as seem necessary in application to the Naval Reserve. The average figure per acre thus arrived at as representative of the Reserve is then multiplied by the total acreage that is estimated to prove productive in order to get a total estimate for the Reserve.

Considering conditions in Teapot field, I find on comparison of well logs furnished by Mammoth Oil Co. that the Second Wall Creek "sand" is 28 to 65 feet thick throughout the oil-bearing area and averages about 50 feet. Its thickness in Salt Creek field ranges from 20 to 100 feet, the lowest averages for 640-acre sections of land being 32 and 34 feet respectively in the case of secs. 20 and 16, T. 39, R. 78.

According to Midwest Refining Co. 43,838,580 barrels or about 61 per cent of the total production of Salt Creek field up to January 1, 1923 came from the Second "sand." Now considering 19,000 acres as the productive area of the Second "sand" in that field (not including Teapot) up to January 1st, we get about 2300 barrels as the production per acre of that "sand" to that date. Assuming the field as 15 per cent exhausted, its average ultimate production per acre would be about 15,300 barrels. As a matter of fact some portions of the field show a much greater production already, but a greater figure should not be expected for the entire field.

The sand body in Teapot dome averages five-sixths as thick as that in Salt Creek dome; hence the average production per acre in the Naval Reserve is considered 12,750 barrels, and since the probable productive area of Teapot is 2300 acres, its total ultimate production is estimated (very roughly) at perhaps 29,000,000 barrels. Oing to the presence of water in the bottom of the sand throughout a considerable portion of the "saddle" and the small initial productions of a majority of the wells to date, the actual ultimate production may be much less.

(f) Checking of estimate by porosity-saturation method. The porosity-saturation method serves as a check on the estimates made in the preceding paragraph. It is manifestly unsafe to make estimates of recoverable oil content from the thickness or porosity of the sands alone, and when used as a single basis of appraisal the method is likely to result in too high an estimate, but it is a valuable guide in considering whether figures arrived at by other methods are justified.

With the object of ascertaining more definitely the porosity of the Second Wall Creek "sand" in Teapot field I had a test made of a sample actually blown from Well 201 in SW cor. NW¼ sec. 3 T. 38, R. 78. According to the United States Bureau of Mines, it was "from the upper 15 feet of the sand before any oil was found but possibly 1,000,000 cu. ft. of gas had been obtained." A photograph of a microscopic section of the sand was made by Dr. Charles P. Berkey and the porosity estimated was 13.87 per cent. Since, however, oil had not been tapped when the sample was taken, and since other fields of less production and less "sand" thickness attain greater measured porosities, I assume a porosity of 20 per cent for the part of the Second "sand" that produces oil.

Assuming two-thirds the average thickness (50 feet) of the Second "sand" to be "pay" which seems a reasonable assumption, the "pay sand" would amount to 1,452,000 cubic feet per acre; and under 2300 acres of productive area it would total 3,339,600,000 cubic feet. Then, if the effective porosity is 20 per cent, which is a reasonable assumption, the pore space will amount to 667,920,000 cubic feet, or 119,058,823 barrels. But since only about 20 per cent of oil is recoverable from the earth by methods in use in the fields, 23,811,765 barrels is arrived at as the production if all above assumptions be true.

As has been stated, the necessary assumptions are too numerous to make a close appraisal possible by the porosity method alone; but when used as a check on the "production-per-acre method," the result is valuable in showing that the results obtained by the latter are within the limits of probability. If 80 per cent of the thickness of the sand is assumed to be "pay" instead of 66⅔ per cent, the estimated production will practically coincide with that found by the production-per-acre" method.

As a round fiure representing the average of the two estimates 26,000,000 barrels may be used, of which 16,600,000 barrels may be found north of Fault No. 4 and 8,300,000 barrels south of it.

Article 14.

To What Extent Was Drainage or Reduction in Percentage or Recoverable Oil Ascertainable Before Execution of the Naval Reserve Lease?

(a) Summary. I find that 1400 acres of the Reserve appear to contain gas rather than oil and that the probable oil-bearing area is 2300 acres. Since 1600 acres of oil-bearing land are situated north of Fault No. 4, approximately 70 per cent of the oil-bearing area of Naval Reserve No. 3 is susceptible of drainage or reduction of the per cent of

Table X.—Production of oil and gas in naval reserve No. 3 to July 1, 1923 (from information furnished by Mammoth Oil Co.)

MONTHLY PRODUCTION OF OIL FROM SECOND "SAND" WELLS (BARRELS).

Section No.	Well No.	Natural production first 24 hours	1922 Oct.	Nov.	Dec.	1923 Jan.	Feb.	Mar.	Apr.	May	June	Total
3	201	126	†1,387	265	.....	.....	1,518	3,107	3,455			
3	203	100	.....	.....	.....	.....	.....	.....	.....	4,833	4,775	19,340
10	401	.....	.....	1,452	1,127	728	.....	.....	.....	.....		
11	301	44	.....	.....	66	.....	.....	.....	.....	.....	812	4,185
14	301	2,804	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	101	156	.....	.....	1,151	2,867	2,929	2,963	2,486	2,246	3,460	18,102
20	103	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	401	.....	.....	.....	.....	.....	.....	.....	1,601	2,933	2,364	6,898
20	402	3,328	.....	.....	.....	.....	.....	.....	.....	70,653	72,010	142,663
20	102	85	.....	.....	127	1,583	1,146	1,292	1,020			
21	201	29	.....	.....	.....	.....	563	256	295	1,505	1,306	9,093
27	301	114	114	.....	.....	.....	.....	.....	.....	.....	.....	114
28	301	68	.....	.....	.....	179	267	53	.....	336	1,167	2,002
28	401	.....	.....	.....	.....	.....	.....	1,625	5,114	4,937	5,098	16,774
28	201	118	.....	.....	.....	.....	.....	495	863	1,539	1,345	4,242
29	103	.....	.....	.....	.....	.....	.....	.....	.....			
29	106	65	.....	.....	.....	.....	.....	.....	.....	655	3,371	4,026
29	201	263	1,328	8,754	13,084	19,726	16,874	17,600	16,922	17,586	15,927	127,801
29	204	200	.....	.....	.....	.....	.....	.....	.....			
29	203	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
33	401	45	.....	1,445	3,597	3,779	2,744	2,760	2,484	2,154	2,104	21,067
34	201	158	.....	.....	.....	.....	452	7,807	7,959	7,877		
34	202	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,587	31,682

MONTHLY PRODUCTION OF OIL FROM SHALE WELLS (BARRELS)

2	301	1,328	2,804	12,819	4,158	2,269	1,326	463	137	2,088	476	26,540
3	*203	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	204	1,400	.....	.....	.....	.....	.....	.....	.....	*	2,124	2,124
10	101	210	.....	.....	.....	.....	.....	.....	.....	1,796	2,324	4,120
15	‡101	Show	878	820	85	.....	.....	.....	.....	.....	.....	1,783
29	–106	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total			6,511	25,555	23,395	31,131	27,819	38,421	42,336	121,138	126,250	442,556

†The first streak of oil was at 16 feet from top of "sand"; made 126 barrels of oil and 1,500,000 cubic feet of gas per day.
*Production included with well 201.
‡Repeated under gas wells.
–Production included with well 103.

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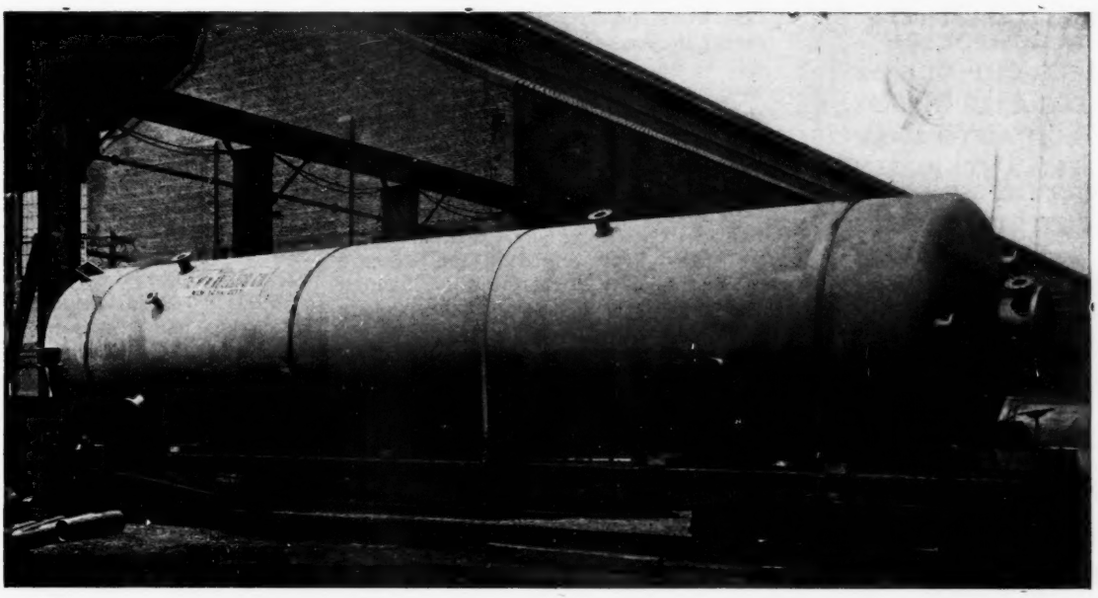

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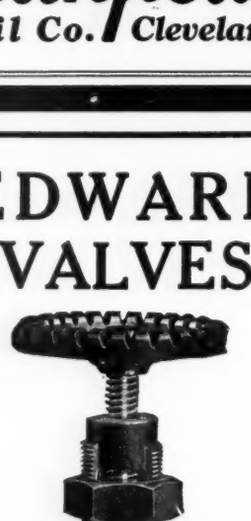

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recoverable oil through the influence of wells outside the Reserve. Although present developments render the evidence on this point clearer than before drilling commenced, nevertheless such susceptibility was demonstrable to the extent of 43 per cent of the oil-bearing area by making careful studies before the execution of the lease. About 30 per cent of the probable oil-bearing area of Teapot dome remains insusceptible to any commercial degree to drainage or the reduction of the percentage of recoverable oil; and this limitation to serious drainage or reduction was likewise ascertainable before the execution of the lease. The evidence that these facts were ascertainable appears quite conclusive.

(b) Amount of development information available early in 1922. The estimates in preceding Articles were made on the basis of the best evidence available now, including geology, well logs, production records, etc. At the time of execution of the Naval Reserve lease nothing but geological facts were available so far as Teapot dome is concerned, supplemented by logs and production figures of wells in Salt Creek field. No wells had been drilled in the Reserve (except shallow tests to the Shannon sand) and no drilling had been done near its borders. There were, however, enough edge wells, specifically those described in sub-section (h) of Article 6 to show that the "saddle" would probably be filled with oil—not with water; and the evidence was good that some drainage or reduction in the percentage of recoverable oil in the Naval Reserve would ensue on account of wells soon to be drilled in the southern part of Salt Creek field.

(c) Completeness of the available geological information. Geological facts, on the contrary, were as complete then as now; consequently, on the basis of geology alone, certain facts could have been previously established. Even outside the critical area, a detailed geological map could have been made, and the essential facts of the structure, including faults, could have been ascertained previous to 1922.

(d) Summary of facts demonstrable before execution of the lease. The two preceding paragraphs may be supplemented by stating that the following facts were demonstrable in advance of executing the Naval Reserve lease:

1. Integrity of Teapot dome.
2. Position of "saddle."
3. Probable presence of oil—not water—in the "saddle."
4. Continuity—not contiguity—of the fields.
5. Approximate position of "edge water" line.
6. Certainty that the "edge water" line will encroach on the "saddle" during exhaustion of the fields.
7. The fact that gas pressure (not necessarily gas production) would exist, with the oil and the certainty of its reduction during development.
8. Certainty of drainage or reduction in percentage in recoverable oil by adjoining wells from the Reserve as far south as the first fault barrier.
9. Position of the first demonstrable fault barrier.
10. Probable adequancy of the barrier.
11. Area susceptible of drainage or reduction in percentage of recoverable oil.

(e) Summary of what was not demonstrable before execution of the lease. Certain facts, however, were not demonstrable at that time, viz:

1. Barrenness of the First Wall Creek "sand" under entire structure.
2. Exact position of "edge water" line.
3. Existence of natural gas production in the Second Wall Creek "sand" instead of oil under a large area.
4. Exact area of oil-bearing acreage.
5. Owing to previous ignorance of depth at which the "water sand" or other key bed would be encountered in wells since drilled, the exact position of certain contour lines might have been subject to change. In other words, certain lines might have been placed a few hundred feet from their position as now mapped. However, the lines need never be shifted greatly on account of information derived from wells, and in no case were they shifted enough to give a different conclusion on the problem or to change areal estimates greatly from those stated in this report.

(f) How large an oil-bearing area should originally have been expected? According to the former Secretary of the Interior[1] the experts of his department in June, 1922, believed that "an area of not more than 5500 acres, and generally estimated as an area of 4700 acres" out of the 9000 acres (approximately) of Naval Reserve No. 3 would produce oil.

I have shown that the geological structure and essential facts relating to the principal faults were ascertainable prior to the execution of the Naval Reserve lease. We may assume that previous geological studies made with the thoroughness of recent ones would have established closely the position of the main faults and the probable existence of a barrier in Fault No. 4. The oil-bearing area, however, may logically have been estimated about 3600 acres (gas-bearing area plus oil-bearing area) or 39 per cent of the Reserve instead of 25 per cent of it as at present.

Certain outcrops in sec. 33 show that Fault No. 4 dips south 50 degrees, but since faults sometimes change their dips in depth, and since some surface exposures can easily be overlooked by a geologist, the fact or significance of this dip need not have been expected. At that time a field geologist might have been to a certain extent excusable in mapping the fault as vertical instead of inclined 50 degrees, as is the case.

Article 15.

Possible Sources of Oil Aside From Second Wall Creek "Sand."

Since any additional possibility of oil

[1]Fall, A. B., U. S. Senate, Doc. 210, 67th Cong., 2nd Sess., 1922, p. 17.

has an important bearing on the wisdom of the Naval Reserve lease, consideration is necessary of the possible oil sources in Teapot field aside from the Second Wall Creek "sand." Although some oil may exist in deeper sands, nevertheless (1) the production of these sands is problematical, (2) they are very deep and (3) the expense attending development is likely to discourage their exploitation in any development less pretentious than the present one.

(a) Shannon and First Wall Creek "sands." In several wells drilled on Teapot dome years ago the Shannon sand is reported to have produced 3 to 8 barrels of oil but is not deemed of any importance commercially. The First Wall Creek "sand" has proved barren everywhere on Teapot dome.

(b) Possibilities in deeper sands. No person can say whether or not "sands" will be productive. An oil company operating a structure the size of Teapot dome, particularly after having discovered gas instead of oil under a large area in the principal producing "sand," will certainly drill sooner or later to the next lower "sand," which is probably the Lakota and should be found about 1050 feet below the top of the Second Wall Creek "sand."

We must not assume that the entire area of the Reserve is likely to be productive of oil in some sand. It does not follow, because the productive area of the Second Wall Creek is greater than that of the First, that a deeper "sand" will attain a still greater productive area. Such might be the case by accident but not owing to any known natural rule of oil occurrence. The Lakota "sand" is commonly a "water sand" and its productive areas in Wyoming are comparatively limited. In my opinion the productive area (if any) of the Lakota sand in Teapot dome is more likely to be small than large, but the area can not be ascertained prior to drilling.

Oil at greater depth than the Lakota "sand" appears almost beyond reach on Teapot dome or at Salt Creek, but it will be reached by the drill sooner or later. Plate III shows that the most promising deeper sands are the Sundance, Embar and Tensleep, all of which are productive in some Wyoming fields, and small oil wells have been obtained in certain fields in other "sands" of the section.

(c) Possibilities in shale. Not much should be expected in the way of shale wells. No. 301 in the center of south line of sec. 2, T. 38, R. 78 was completed October 5, 1922, at 1515 feet, or 1035 feet below the top of the Shannon sand with a production of 6900 barrels reported in 30 hours and up to July 1st it produced a total amount of 26,540 barrels.

Well No. 203 in the west edge sec. 3, T. 38, R. 78 made 100 barrels per day from shale 1605 feet below the top of the Shannon "sand;" No. 204 in the same section made 1400 barrels from shale 1005 feet below the top of the Shannon. Well No. 101 in the center of the north line of sec. 10 reported shale oil 700 feet below the top of the Shannon; No. 301 in sec. 11, practically a failure in the Second Wall Creek, reported a good showing of shale oil 1100 feet below the top of the Shannon. No. 101 in sec. 15 reported a hole full of shale oil at 1900 feet, or 1495 below the top of the Shannon. Many other wells report showings of shale oil. In spite of all this the only existing shale wells which are considered likely to produce commercial quantities of oil appear to be No. 301 in sec. 2 and No. 101 in sec. 10.

My study of shale wells in the Salt Creek field finds only about 50 in the entire field, and of them several have been abandoned. Shale oil in commercial quantity may be discovered in Teapot field, but there is no geological feature to encourage this belief, and shale oil will not add materially to the estimated total production.

Article 16.

What Sources of Profit Exist in the Naval Reserve Aside from its Oil?

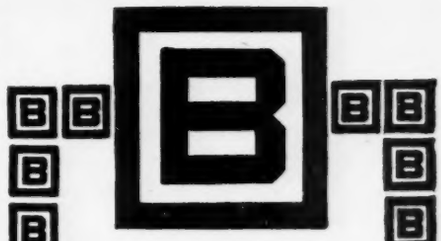
Aside from oil, Naval Reserve No. 3 contains great possibilities of natural gas development and of some extraction of gasoline from gas.

(a) Natural gas. Up to July 1, 1923 drilling had developed seven gas wells in the Second Wall Creek "sand," the open flow capacities of which range from 8,000,000 to 60,000,000 cubic feet per day, or a total of 185,000,000 cubic feet per day,[1] measured by United States Bureau of Mines. Therefore a tremendous gas resource exists in Teapot dome and the Naval Reserve lease carries the gas rights. As in other gas fields, the gas lies in the center of the dome. Some doubt exists whether oil surrounds the gas at the south end of the dome or whether gas continues to the "edge water" line. No doubt exists, however, that the gas area will total probably 1400 acres.

A rough calculation of the gas possibly available in Teapot dome may be useful. If the "pay" sand aggregates two-thirds the average thickness of the sand (this average being 50 feet), 1,452,000 cubic feet of "pay" sand would exist per acre, or 2,032,800,000 cubic feet of "pay" sand for the 1300 acres of estimated gas-bearing territory in the Reserve. On the basis of 20 per cent effective porosity, 406,560,000 cubic feet of pore space therefore exist in the "pay" portion of the sand.

The rock pressure of Naval Reserve gas ranges from a minimum of 950 lbs. per square inch to a maximum of 1425 lbs. per square inch in one well and the average is about 1000 lbs. Since the volume varies inversely as the pressure the open-flow capacity of the field may be estimated by the ratio of 1000/12.07 in which the figure 12.07 represents the atmospheric pressure of Casper in lbs. per square inch, and which is about the atmospheric pressure at Teapot dome. Multiplying the effective porosity of the

[1]According to letter from Bureau of Mines, dated July 25, 1923 this total had reached 220,000,000 cubic feet per day from eight wells



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"sand" by the above factor, we get 33,683,512,011 cubic feet, reduced to the local atmospheric pressure, which may be expected in this field. I have no figures on the per cent recovery of natural gas from a "sand" but the greater part of this gas can probably be recovered. Porosity is not an absolute criterion for gas or oil content but the figure nevertheless represents approximately what the potentialities of the field may be.

The value of natural gas in any field is but a small proportion of the city price of gas. Casper, situated 30 miles south of Teapot dome, is a consumer of gas, using an average of about 3,000,000 cubic feet per day exclusive of refineries (which use a large amount) and this figure will increase to a certain extent if gas becomes available. Gas is now brought from fields west and south of Casper by New York Oil Co. and Producers & Refiners Corp. Natural gas will soon be brought by Midwest Refining Co. from Salt Creek to its oil refineries at Casper. In view of the several sources of gas and distance from the city, I consider gas in Teapot field worth not over 5 cents per thousand cubic feet but this figure would result in total receipts by Mammoth Oil Co. of $1,684,175 for gas estimated to exist in the field. The corresponding royalty to the United States government on the basis of the maximum gas royalty (16⅔ per cent) would be $280,696.00.

(b) Gasoline from natural gas. The gas in Teapot dome is generally considered "dry gas"with little gasoline content and only one well has been tested for gasoline so far as I have learned. The gasoline content as determined by H. W. Young of Midwest Refining Co. was .23 gallon of 72 gravity per thousand cubic feet of gas. The gasoline content is not too low to be of value, as even one-tenth of a gallon per thousand cubic feet of gas is commercially profitable. In Teapot dome gas there may exist 7,747,208 gallons of gasoline, judging by the test mentioned above, and even at the lowest possible wholesale price per gallon, this will result in a profit to the company which can not be entirely negligible and some slight royalty will accrue to the United States government. Until a marker exists for the gas, it will not be advisable for the operating company to open its wells and use gas for the manufacture of gasoline, but profit will undoubtedly ensue from extracting the gasoline when the gas is used commercially at some future time and when the rock pressure of the field shall have become low owing to depletion of gas and oil.

Article 17.

What Possible Alternatives to the Existing Type of Lease Might Exist?

Having established the fact that some sort of attention to the Naval Reserve was necessary early in 1922, the question of the wisdom of the existing lease still remains. In order to enable you adequately to decide whether leasing of the reserve to Mammoth Oil Co. under such a least was wise, I have been obliged to consider not only the type of lease and the geological conditions on which it depends, but also whether some other manner of approaching the problem might have been wiser in the light of what has been said in Article 14 as to previously ascertainable facts relating to areas, barriers, drainage and reduction of gas pressures. The following plans have been suggested or might be suggested for development of the Reserve as alternatives to leasing it in one block:

A. Acquisition by the Government of adjoining rights in Salt Creek field.

B. Leasing a line of quarter sections on the extreme north edge of the Reserve and drilling a line of wells along the boundary.

C. Leasing successive lines of quarter sections progressively from north to south.

D. Leasing the entire Reserve in quarter section bocks.

E. Leasing in one block only that portion of the Reserve north of Fault No. 4.

I have already shown that certain drainage and reduction of gas pressure would undoubtedly take place due to drilling neighboring wells at south end of Salt Creek field even if Teapot dome had never been drilled. The question now is, not whether anything should have been done about it but whether any wiser policy could have been adopted. The above enumerated suggestions are here considered with reference to whether any one of them would be an adequate alternative to leasing the entire Reserve.

(a) Acquisition by the Government of adjoining rights in Salt Creek field. Let us momentarily assume that the United States Government could consistently acquire oil rights of which it had already disposed in the southern part of Salt Creek field adjoining the Naval Reserve. My opinion is that no remedy to the then existing situation would have ensued thereby, since such action would only extend northward the area in which drainage and reduction in the percentage of recoverable oil would take place and ultimately these calamities would extend just as far south as they would without such hypothetical Government acquisition.

(b) Leasing a line of quarter sections on the extreme north edge of the Reserve and drilling a line of wells along the Reserve boundary. Leasing and drilling wells on a line of quarter sections on the north edge of the Reserve would remedy nothing, as in the above-supposed instance. When the quarter sections were drilled by their lessees, drainage and reduction of the percentage of recoverable oil in the unleased portion of the Reserve would take place even more rapidly than if the tracts were not leased. Such leasing would only defer the time when the entire Reserve must ultimately be leased as far south as Fault No. 4 in sec. 33.

(c) Leasing successive lines of quarter sections progressively from north to south. There appears little practical difference between leasing a single line

of quarter sections on the extreme north boundary of the Reserve, and, on the other hand, leasing successive lines of quarter sections progressively toward the south after the first line has been partially developed. Whatever development takes place on the north boundary of the Reserve or within the Reserve north of Fault No. 4 will drain oil from immediately surrounding acreage and, owing to reduction of gas pressure, will reduce the percentage of recoverable oil under the entire Reserve north of Fault No. 4. Hence any leasing of the northern part of the Reserve by lines of quarter sections seems relatively unwise.

(d) Leasing the entire Reserve in quarter section blocks. In Osage County, Oklahoma, where the land belongs to an Indian tribe, the Department of the Interior is gradually leasing the entire county—so far as geologically favorable—in quarter section blocks auctioned off from time to time with reference particularly (1) to getting as much bonus money as possible for the Indians, and (2) to adequately testing the county with reference to its oil content. This policy naturally results in often drawing oil from unleased areas. Nevertheless sales are held frequently, so that excessive drainage of oil need not necessarily take place previous to leasing of adjoining quarter sections. Even though extensive drainage may sometimes take place from undeveloped leases in Osage County, this is not generally considered objectionable from the Government's point of view, since no differences of ownership exist, i. e., all land belongs to the Osage Indians who receive royalties on it.

Technically, no reason appears to exist why the plan could not have been adopted as a satisfactory substitute for the present lease. The main consideration is, however, whether such a plan would have been more advantageous to the needs of the Navy and to the people of the United States than the present lease. Even if a greater total royalty (as opposed to the 12½ to 50 per cent royalty specified in the existing lease) could accrue under the small lease plan, it would not benefit the Navy in the absence of an advantageous contract for the exchange of royalty oil for fuel oil at strategic points, as under the present lease. In other words, the small lease plan might be financially sound and technically adequate but would not have served the desired purpose.

(e) Leasing in one block of only that portion of the Reserve north of Fault No. 4. I now come to a final alterna- suggestion has not previously appeared, but it must be considered nevertheless The reserve might have been leased in one block from its northrn edge only as far south as Fault No. 4 thereby covering a total area of 3230 acres or an oil-bearing area of 1600 acres. In Article 12 I have shown that the area north of this fault is susceptible to drainage or to reduction of the percentage of recoverable oil on account of wells that might be drilled at the south end of Salt Creek field but that the existing evidence op-

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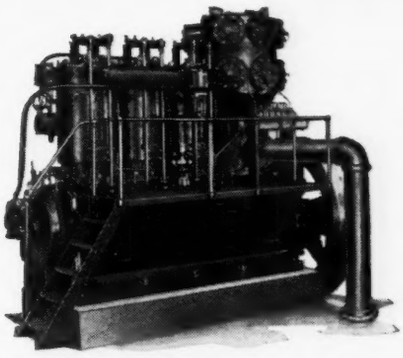

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poses the belief that such drainage or reduction could ensue from farther south. No person can say absolutely that migration of oil could not take place from south of Fault No. 4 owing to operations north of it, but in my opinion the fault will act as a complete barrier. Any migration which may take place across it will be through some minor crevice and will not affect the general situation.

Therefore, in my opinion, the Naval Reserve might have been leased from its northern boundary south to Fault No. 4 (but not beyond it) with entire confidence that migration or reduction in percentage of recoverable oil from farther south would not take place. Moreover, I have shown in Article 12 that the productive area south of Fault No. 4 is largely gas-bearing rather than oil territory and need hardly be considered as an important oil resource of Teapot dome.

(f) Summary of alternatives. Summarizing the above, I find nothing which I would consider a satisfactory substitute for the present lease except the plan of leasing only from the north boundary of the Reserve as far south as the surface exposures of Fault No. 4 in center N½ sec. 33 (Plan E).

Gas was unknown in the Reserve when the lease was executed, and the purpose of conserving the oil Reserve so far as possible might have been served by this plan, which would have saved 32 per cent of the supposed oil-bearing area from drainage or reduction. Eleven hundred of the estimated 2100 productive acres south of Fault No. 4 are estimated as gas territory instead of being oil-bearing. The balance, only 700 acres, constitutes only 33 per cent of the oil-bearing area of Teapot dome, and the undeveloped status of the lease south of the fault renders it possible that the percentage will be smaller than this. Much good might have been accomplished through Plan E if desired to maintain the gas field of Teapot dome as a gas "Reserve," but since an oil Reserve was desired, the plan produces no particular change in the general situation so far as the United States Navy is concerned.

My opinion is that in any development of Teapot dome, gas ought not to be extracted in great commercial quantities from north of Fault No. 4 or from wells close to that fault which may penetrate it and tap the sand somewhere beneath it (since the dip is about 50° from the horizontal). If gas development takes place for commercial purposes, I believe that it should be confined to the southern part of the Reserve and that no commercial extraction of gas from wells is desirable, even from the lessee's standpoint, north of a line 2500 feet south of where Fault No. 4 cuts the surface.

I have shown that a great gas reserve exists in what was supposed to be an oil reserve. This could not have been foreseen although it is strange nobody seriously considered the possibility of discovering gas in quantity. The gas may be worth $1,600,000 to the lessee if sold to one of the companies supplying Casper with natural gas, and the gas royalty to the United States Government may reach $250,000. We must keep in mind the object of obtaining an oil supply for the Navy, i. e., the extraction of the greatest possible amount of crude oil which may be exchanged for fuel oil at some strategic point. Commercial reduction in gas pressure of wells from which gas may be produced north of Fault No. 4 will reduce the pressure throughout the sand in the entire area north of that fault, but the gas Reserve south of Fault No. 4 will not be affected by development north of it.

Article 18.

What Bearing on the Principal Problem Has the Discovery of Gas instead of Oil Under a Large Area in the Naval Reserve?

(a) Definition and summary. The Naval Petroleum Reserves were created in order to provide oil for use of the Navy if needed during a time of future emergency. Naval Reserve No. 3 containing 9481 acres, more or less, was created April 20, 1915, with the evident intention of including all domal lands south of the "saddle" in the Salt Creek anticline. The Reserve embraces the entire Teapot structure and in addition about 500 acres inside the south end of the Salt Creek structure and about 2000 acres in and bordering the "saddle" between these structures.

I have shown that the actual area of oil occurrence in Teapot dome is very different from that anticipated when the lease was executed and still different from that predicted at the time of creating the Naval Reserve in 1915. Whereas, in that year, only the First Wall Creek "sand" was known, the Second Wall Creek "sand" has since been discovered; but the First "sand" is barren under 80 per cent of Salt Creek field and under the whole of Teapot field. The Second "sand," unknown in 1915, is expected to prove productive of oil under 2300 acres of Teapot field and productive of gas under 1400 acres.

(b) Exposure of delusions. Notwithstanding the fact that the First "sand" alone was considered in creating the Naval Reserve, all oil leases in all fields are from the surface downward, no matter in what "sand" oil be found, because new and unknown "sands" are confidently expected in all fields and are frequently discovered.

Since the execution of the lease, the First Wall Creek "sand" (the one originally known and on account of which the Reserve was created) has been tested and found barren in Teapot dome; thus no belief or hope now exists that oil will be found in that "sand" anywhere in the Reserve. Such being the case, the "Reserve" might be supposed not to have been a "reserve" at all; i. e., the known sand was barren and would have disappointed the Navy if depended upon in a crisis. If oil from the Reserve had been suddenly needed in a crisis and the Second "sand" not found on testing, the Navy might have

been caught short of fuel and incalculable disaster might have ensued. A parenthetical question comes to mind: Which might be the greater mistake (1) to lease the Naval Reserve in the year 1922, or (2) to name as a "Reserve" in 1915 a field that is now known to have been merely a speculation, which, if chance had not intervened in the form of the Second Wall Creek "sand," might have now been labelled a greater myth than the supposed water barrier between Salt Creek and Teapot domes?

The discovery of "sand" after "sand" in a producing oil field is now so frequent an occurrence that it excites no wonder among the oil fraternity, and in the year 1917 oil was discovered in the Second Wall Creek "sand." Thus everyone has since come so gradually to accept the Second "sand" as coextensive with the Salt Creek field that when the lease on the Reserve was executed nobody seems to have remembered that this "sand" had not all the time been expected as the producing "sand."

In my opinion, the barrenness of the First Wall Creek "sand" proves in itself the wisdom of some sort of lease. The execution of the lease has established this fact instead of leading the Navy and Interior departments on in blind belief that they were reserving a far greater amount of oil for an emergency than was the case. So inconsistent are oil field conditions that the chance which rendered the First "sand" dry might have rendered the Second "sand" dry also. Then no oil "reserve" at all would have existed.

The delusion was greater than this. Whereas 3600 acres were considered an oil reserve, development has on the other hand shown that about 1400 acres of it are gas- instead of oil-bearing territory. Only 25 per cent of the Naval Reserve will be oil-bearing at all; the balance is barren or is gas territory, and instead of 3600 acres of oil territory only 2300 acres are capable of producing oil.

Article 18.

What Royalties Will the Government Receive from Naval Reserve Oil?

(b) Will the Government receive a fair oil royalty? One of the reasons given for granting the present lease[1] was that "the Government is desirous of exchanging crude oil that may be received by it as royalty from the said Naval Reserve No. 3 for fuel oil for the use of the United States Navy. . . . ." The question now arises whether natural conditions existing in the oil "sands" are such that the Government will receive a fair oil royalty under the provisions of the contract.

Sub-section (b) of Section "3 Royalties" in the lease provides (1) for the royalty that shall be paid on oil produced of 34 degrees Baume or over and (2) for all oil produced of less than 34 degrees Baume. Since the gravities

[1]Letter from the Acting Secretary of the Interior, Apr. 28, 1922, Senate Doc. 196, 67th Cong., 2nd Sess., p. 2.

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ADVANCE Mine Car Greases
These greases are made from mineral oils, developed to stand heavy duty and operate effectively under extremely low temperatures.
Write for our prices.
SEE PAGE 86
AMERICAN
Oil Corporation
Jackson, Mich.

HEIL

We have used all methods of tank construction and have found the electric arc welding process gives the greatest satisfaction and makes the most dependable tank. It insures absolute fusion of the metal with the least amount of contraction and expansion.

—QUALITY—

The Heil Guarantee of Quality goes with every tank. You above all must be absolutely satisfied for that is the source of a good will which we continually strive to add to a well earned reputation of Honest Quality.

—QUALITY—

The new 1924 Heil-Ford, 300 gallon, 3 compartment truck tank, has been standardized and placed on a quantity production basis. Immediate delivery can be made from stock, shipments go out the day the order is received. Many worth-while features are included in this 1924 tank making for greater convenience, better appearance with greater advertising value.

—QUALITY—

While the principal requisite of a truck tank is to give Transportation service—the appearance or advertising value of the tank must be taken into account. This phase of tank construction has been carefully considered by The Heil Co.

—QUALITY—

Features of exclusive Heil design, which have been patented, and on which patents are pending, are the: Rear Control Emergency Valves; Unit and Individual Control for emergency valves; Heil Hinged Lift-Lock Bumper; Heil Sill-Shifter Bracket; Full-Flow Air Vents; Double bulkheads with seams on outside; and Manhole dome cover with dove-tailed lead gasket.

—QUALITY—

If it's a 2500 gallon truck tank or a 300 gallon job for the Ford—Heil makes it. 23 years of service is your best guarantee of Quality.

Quality TANKS BODIES & HOISTS "Made by Heil"

"If My Memory Serves Me Right, None of Our Forty Heil Tanks Have Ever Needed Repairs"

"We wish to state that we have approximately forty of your truck tanks in service, which have been purchased during the past ten years, and also wish to say that all tanks purchased from Heil are still in service, and if my memory serves me right none of these have ever needed repairs. We are sending you a photograph of one of our fleet under separate cover."

This enthusiastic letter was received from S. M. Cohn of the Independent Oil Company, which operates a large fleet of trucks in and about Altoona, Pa.

It is an interesting fact, that the enduring Quality of Heil tanks often enables them to outlive the lives of several trucks. For genuine tank satisfaction, place your tank business with Heil.

THE HEIL CO.

1238-50 - 26th Ave. Milwaukee, Wis.

Distributors:

The Heil Co., Philadelphia.
The Heil Co., Chicago, Ill.
Heil Northwestern Sales Co., St. Paul, Minn.
Motive Parts Corp., New York
General Auto Truck Co., Washington, D. C.
Steffen Van Steenwyk Co., Sioux City, Ia.
Modern Vehicle Co., San Francisco
Standard Parts Corp., Richmond
New Mexico Road Equip. Co., Roswell, N. M.
Engineering Equipment Co., Lansing

Distributors:

H. P. Wilson & Co., Denver, Colo.
Bacon, Matheson Forge Co., Seattle
W. A. Browning Machy. Co., Dallas
Montana Good Roads Machy. Co., Billings, Mont.
Shop of Siebert, Toledo, O.
Continental Body Co., Memphis
The Kranz Automotive Body Co., St. Louis, Mo.
Chas. Fowler, Halifax, N. S. Canada
E. W. Johns Equip. Co., Fort Wayne
Mayer Body Corp., Pittsburgh.

Largest Manufacturer Steel Dump Bodies, Hydro Hoists and Compartment Truck Tanks

actually range from 35 to 43 Baume it is clear that all the oils fall in provision (1) of this sub-section of the lease. The oil is then classified with reference to what every well averages per day in any calendar month, the royalty being graduated from 12½ to 50 per cent according to the rate of production as follows:

Graduation of royalties in Naval Reserve No. 3.

	Royalty (per cent)
On that portion of the average production per well not exceeding 50 barrels per day for the calendar month	12½
On that portion of the average production per well of more than 50 barrels and not more than 100 barrels per day for the calendar month	16⅔
On that portion of the average production per well of more than 100 barrels and not more than 200 barrels per day for the calendar month	20
On that portion of the average production per well of more than 200 barrels and not more than 300 barrels per day for the calendar month	25
On that portion of the average production per well of more than 300 barrels and not more than 400 barrels per day for the calendar month	30
On that portion of the average production per well of more than 400 barrels and not more than 500 barrels per day for the calendar month	35
On that portion of the average production per well of more than 500 barrels and not more than 600 barrels per day for the calendar month	40
On that portion of the average production per well of more than 600 barrels and not more than 800 barrels per day for the calendar month	42½
On that portion of the average production per well of more than 800 barrels and not more than 1000 barrels per day for the calendar month	45
On that portion of the average production per well of more than 1000 barrels per day for the calendar month	50

Examining now the actual pipe line runs, with reference to royalty now due, we find that the latter aggregates 72,432 barrels or 17.5 per cent of the runs. This royalty appears offhand to be a very small share. Nevertheless, although a plan might be desired by which the Navy could reserve a higher royalty for itself, no such plan has been suggested, so far as I am informed. Therefore the royalty question must be approached from the standpoint of what is customary in other fields.

Practically all commercial leases on private lands carry a uniform 12½ per cent royalty. Indian leases generally provide 16⅔ per cent royalty up to a certain average production per well and 20 per cent above that. On United States public lands the fixed royalties range from 5 to 25 per cent.

Operations to date in Naval Reserve No. 3 have produced few wells of large productions, but the lease provides for an automatic increase in royalty if such wells be drilled. My opinion, based on existing royalties elsewhere and knowledge of what an oil company can safely assume is that the royalty provided is fair to the government and the 17.6 per cent accrued to date is as high as could be expected, considering the conditions of the lease and the actual results of the wells.

(c) Is the gravity of the oil such that the Navy will receive a fair exchange value in fuel oil? Sub-section 3 (b) of the Naval Reserve lease provides a smaller net royalty for oil less than 34 degrees Baume than it does for oil above 34 degrees, and the lease provides that oil in the latter classification shall be exchanged at tide water for fuel oil on a more advantageous basis than in the case of heavier oil; i. e., a full barrel of fuel oil is received in exchange for each barrel of crude royalty oil of 34 degrees Baume or over, whereas only 63 per cent of one barrel in fuel oil is to be given for each barrel of crude royalty oil of less than 34 degrees. The question of whether these ratios are fair is probably beyond the province of this report, since it involves a complexity of industrial conditions far removed from the reserve, but I must call attention here to the existence of the above mentioned differential as taking into account the difference in gravity.

Article 20
Conclusion

This report, on the geological problems connected with the Naval Reserve lease, is not considered exhaustive. The problems are complex and numerous and any person connected with the Reserve in a governmental or other capacity may reasonably be excused from being familiar with them all. In fact, new phases of the problems appear almost daily, and a report written a year from now might fulfill purposes which it is not possible to cover adequately or intelligently at present.

Some problems that may change as time goes on or that may demand additional consideration from persons in authority are (1) the question of drilling to deeper "sands," (2) proper handling of the gas field south of Fault No. 4, (3) proper handling of the gas north of that fault, (4) handling of oil wells due to encroachment of "edge water" in the "saddle," and (5) the proportion of oil to be drawn from wells along the boundary of the Naval Reserve, inside and outside of it.

In conclusion I suggest that the work of individuals—geologists or others, who have worked in Teapot dome—be not criticized without bearing in mind that the problems are really complicated and are beyond solution except by careful work, the exercise of correct logic and the expenditure of much time. Previous geological work was mostly good at the time and for the purpose for which it was done, and field men are to be congratulated for learning in advance as many facts as they did. Errors that have appeared in previous work are mostly in the interpretation of facts and (in some cases) in over-ambitious mapping, rather than mistakes in ascertaining or recording the facts. I acknowledge that the complexities relative to the leasing of Naval Reserve surpass anything expected in entering on the investigation. After working on the details it is possible to fully appreciate the difficult situation of anyone who had to answer the "drainage" question in advance of development by drilling.

The danger of some drainage or reduction in the percentage of recoverable oil was evidently recognized by persons in authority and steps were taken for its prevention. Several courses were open to the Government, and the one selected may or may not have been wisest from every standpoint, since they all have advantages and disadvantages which are not always obvious. If the method of approaching the problem was the wisest one, just so much the more credit was due for its inception; and if it was unwise, not too much criticism should be directed to it, when, as a matter of fact, it constituted one of several courses which were open to the Government at the time—all advantageous in some respect and all having possible disadvantages.

May Permit Storage In Transit

TULSA, March 21.—Southwestern railroads have docketed for consideration a proposal to amend storage in transit of petroleum products from Mid-Continent producing points to Gulf ports for export movement. The railroads propose to permit refiners to ship goods from their plants in packages and store the packages for a period not to exceed 12 months. This privilege is now accorded goods shipped in bulk to be packaged at the port.

PITTSBURGH, March 21.—Richard McCormick, president of the Lawrence Petroleum Co., operating in the Mid-Continent field, died here March 11 at his home, 105 East Ohio Street after several months illness. He was 62 years old. He is survived by his wife and son.

PITTSBURGH, March 21.—William Collins, Texas operator, has purchased the properties of the Hartley Oil & Gas Co. in Belmont county, O. The Hartley company is composed of New Kensington, Pa. interests and was a pioneer in Belmont county shallow development.

GULF Refining Company

General Sales Offices
PITTSBURGH, PA.
District Sales Offices
New York, Houston, Atlanta, Boston, New Orleans, Tampa, Philadelphia

REFINERS OF OKLAHOMA TEXAS AND LOUISIANA

PETROLEUM

REFINED OIL
GASOLINE
NAPHTHA
GAS OILS
PARAFFINE WAX
ASPHALT

Fuel Oil--Lubricating Oils

CYLINDER ENGINE
CORDAGE

RED AND PALE PARAFFINE OILS

Vulcan Oil Refining Company

General Offices-Refining Works
CORAOPOLIS, PA.

Refiners of Pennsylvania Petroleum

Manufacturers and Marketers of Highest Quality Petroleum Products. All Grades Gasoline, Kerosene, Lubricating Oil, Gas Oil, Fuel Oil and Compounded Oils.

LOW COLD TEST BRIGHT STOCKS

Tank Car and Mixed Carload Shipments

Ad Copy Takes Oil Facts To The Public

CHICAGO, March 24.—Standard Oil Co. of Indiana is breaking away from the usual kind of advertising which describes qualitites and merits of products by incorporating into its newspaper advertisements current statistics on various petroleum products in an effort to acquaint the public with conditions prevailing in the oil industry.

In one of its latest the company quoted NATIONAL PETROLEUM NEWS on its gasoline consumption estimate for 1924. Copy in this particular ad is:

"The average man, busy with his own affairs, has little time to consider the vast amount of anticipatory work necessary to maintain a high standard of service in the petroleum industry.

"Just as the merchant buys straw hats in November and furs in early summer, so does the Standard Oil Company (Indiana) prepare in winter to supply you in summer with the gasoline and other petroleum products you may need.

"Today, this company is spending millions of dollars to purchase crude oil and to convert this oil into refined products so that next summer it may meet its obligations to supply the demand for gasoline and other petroleum products when pleasant weather makes motoring attractive and agricultural activities necessary.

"Such an effort takes on greater significance when it is known that the production of crude has been checked sharply.

"The American Petroleum Institute reports that from Sept. 8 to Dec. 15, 1923, the production of crude oil fell off 337,400 barrels per day.

"This brings production to a point where it is 56,700 barrels less per day than the estimated daily average consumption.

"The Standard Oil Company (Indiana) is preparing in advance to meet any demands which may be made upon it. It has a tremendous investment in storage facilities, located strategically throughout the territory it serves. By keeping this storage full it insures you an uninterrupted supply of petroleum products at all times.

"To picture the enormous task confronting the Standard Oil Company (Indiana) it is only necessary to state that estimates made by the NATIONAL PETROLEUM NEWS indicate that the 1924 gasoline consumption will total 8,236,000,000 gallons.

"With 31 per cent of the automotive registrations of the country concentrated in the ten Middle Western States served by this Company, this estimate means that 2,553,000,000 gallons of gasoline will be required to supply these states.

"Preparing now for the summer peak load is only another phase of the broad and comprehensive service rendered by this company, which has gained the respect, confidence and esteem of the thirty million people of the Middle West."

Examination And Correlation Of Field Samples In Gulf Coast

By George M. Bevier,
Geologist, Atlantic Oil Producing Co.

ALL samples within the salt dome oil fields are taken from wells drilled by the rotary method, and a few words regarding this system of drilling will be of interest, inasmuch as it was first applied at Spindletop and has been used continuously since that time.

The rotary method of drilling wells has acquired a notorious but undeserved reputation for its shortcomings and inaccuracies with respect to the identification of sub-surface conditions.

At this advanced day one may still hear an old driller remark that it is impossible to judge the true character of formation penetrated and that one may drill through a producing horizon without the slightest knowledge of its presence.

We are free to admit that the old driller's statement may have applied during the early days of development and can cite many instances where his statement was correct. In fact, the development of the Orange oil field was delayed seven years by the inability to identify productive horizons.

The initial expense of drilling often represents a small percentage of a well's potential value. For this reason, it is wise economy to thoroughly follow the progress of a well in all its details.

A bad reputation is hard to overcome and it is through such mistakes that we learn and improve. In defense of our present day drilling methods with the rotary, it may be said that the pioneer was inexperienced and obliged to employ inexperienced drillers. His equipment was likewise inefficient for wells of more than ordinary depth and without the core barrel he was feeling ahead somewhat blindly.

With the advent of improved drilling methods much better results are being obtained with the rotary and it is rapidly becoming popular in areas where cable tools were used extensively. There is, however, considerable room for improvement and work is now progressing with the object of straightening its most glaring defects.

It is highly desirable that we know the exact nature and contents of formations penetrated by our drill, and to observe the identical sand, shale or gumbo where we intend to set screen or casing. Such a means is by no means visionary and would greatly increase our efficiency.

With the ordinary type of core barrel we can now obtain a complete set of samples from top to bottom of the well; however, this method is slow, expensive and entails a certain amount of danger from blowouts. A recent improvement, which permits the taking of cores without pulling out drill stem, has been tried with apparent success. It shortens the time of taking core about 400 per cent and decreases the danger from blowouts. Its principal features are: a detachable core barrel operated by cable within the drill stem.

It is not our intention to discuss at length the comparative merits or demerits of the rotary system, but rather to state that the old methods of securing results are obsolete and must be replaced by improvements, efficient sampling and careful work to satisfy our minds that when we have drilled a hole it is either dry, or may produce from one or more sands.

With the idea of standardizing a method for the examination and correlation of sub-surface samples, and to assemble in condensed form some of the data resulting from the study of well cuttings and core samples within the Gulf Coast, the subjoined notations are presented by George M. Bevier, geologist at Houston of the Atlantic Oil Producing Co.

Mr. Bevier, in making his discussion public exclusively through the NATIONAL PETROLEUM NEWS, says "it is deemed advisable to establish a method whereby all samples may be systematically collected, examined and recorded in such form that this work may serve as a permanent record to be carried on by others without the introduction of any great amount of personal error."—Editor.

Description of Formations

Formations encountered in the Gulf Coast are confined to the Tertiary series, including the recent, Pleistocene, Pliocene, Miocene, Oligocene and the Jackson formation of the Eocene series. They are largely composed of unconsolidated sands, shales and clays which are lenticular and may grade from one type to another within short distances.

Local and minor unconformities further complicate the problem and one can readily understand that sub-surface work in the Gulf Coast is by no means an easy matter.

The paleontologist has materially assisted in the classification of the various formations and this work is accomplishing splendid results. Microscopic study of forminifera and the minute fossils has received widespread attention. As a result it is now possible to more closely define the limits of important horizons. This is particularly true of the lower Claiborne, Cretaceous and underlying formations.

The Tertiary series is a more difficult problem for the paleontologist, owing to the presence of large quantities of rewashed materials from the older formations, to the wide range of species and for the reason that very little has been known regarding Tertiary forams in the Gulf Coast. This work has, in a measure, only begun; but it is hoped that we may in the near future succeed in defining more sharply the boundaries of various sub-divisions in the Tertiary series.

The recent and Pleistocene series are composed of unconsolidated clays, sands and gravels which are largely of a littorial nature. They vary within narrow limits both as to their color and character. Legs of wood, bits of vegetable matter and shells are occasionally found as well as bones of animals including some of the mammals.

Pliocene: The Pliocene consists of deposits much like those of the Pleistocene, such as clays, sands and gravels of various colors and degree of fineness. Fresh water shells, bones and fragments of silicified and lignitized wood are noted. In southeast Texas, a marine phase of the lower Pliocene is reported to produce some oil at Goose Creek and the Orange oil field.

Miocene: This formation has been divided into three members, the upper, middle and lower Miocene. Several other names have been used, but they are confusing and apply to a specific district, or particular phase of the Miocene. The bulk of the oil obtained from the various salt dome oil fields is produced from this horizon. It is largely composed of sands

and clays with considerable limey material and lime concretions. Volcanic ash and occasional streaks of Glauconite are also present.

Corrigan: The Corrigan formation consists of clays and fine sands at the top, grading into coarser sands at its base. The coarse sand is usually hard and frequently shows a typical "rice sand" grain containing volcanic ash and fossil wood. The Corrigan, or Catahoula, as it is sometimes called, produces considerable oil in the salt dome fields.

Jackson: This formation is largely composed of sands and sandy shales with some limey concretions. Volcanic ash and Fuller's Earth occur at intervals throughout. Marine fossils, and at places well developed beds of lignite, have been noted.

Correlation

In the correlation of a particular area it is advisable to rely upon certain details of a formation rather than to attempt the work by a separation of the various formations. One can usually pick out some distinguishing feature such as a thin bed of Glauconite or volcanic ash which can be used for correlation purposes. Thick beds of gumbo or an occasional limey phase of a formation will often substantiate the position of a key horizon.

It is very desirable that all wells be plotted in strip with each formation represented by a color. An advantage is also gained by having two shades of every color, the darker one representing a hard phase of the formation. All shows of oil, gas or water are to be marked together with notations of the various minerals or characteristics found in the examination of core samples, or drill cuttings.

The log form used for plotting should be divided into 10 vertical strips, each strip representing 10 per cent of the formation drilled. The various constituents may then be shown by the percentage of each material present. For instance, a sandy lime can be plotted according to the percentage of sand and lime present.

Taking Core

When a core is to be taken the barrel is first set on bottom and pumps operated for five or ten minutes to wash away any caved material that may have settled to the bottom. The pumps are then shut off and the barrel lowered and rotated slowly by one experienced in this work.

Undue haste usually results in a burned core or no core at all. Burning invariably drives out most of the volatile constituents and imparts an odor similar to that of exploded gunpowder. After a successful core is taken it is scraped on all sides to eliminate drilling mud and foreign matter, then cut through the center.

Examination of Core and Cuttings

A weighed representative sample of about 50 grams is placed in a glass vessel and treated with ether, free from moisture and low in alcohol content. After mixing thoroughly, the liquid is filtered and evaporated in a white porcelain dish. Floating the dish in a pan of hot water will hasten the action considerably.

Experience and observation help one in judging whether the oil is of high or low gravity and in estimating the possibilities of the horizon. An occasional sample is obtained which contains organic matter that will discolor the ether, resembling oil in solution. This substance can be distinguished by placing a small quantity, after evaporation, on the surface of clear water. Organic matter will dissolve in water or settle to the bottom while oil remains on the top as a vari-colored film characteristic of oil.

The sample from which the oil has been extracted is thoroughly kneaded and washed in warm water until all the soft material has been washed away, leaving nothing but the original sand or any hard particles that may remain. The washed sample is then dried and weighed. The difference in weight from the original sample of 50 grams is classified as clay.

A portion is then tested in dilute hydrochloric acid to determine the amount of lime present. The hard particles are examined and classified according to their character as shale, lime, shell, flint, etc. The remainder of the sample is screened to determine its degree of fineness and to estimate the size of screen required for testing the horizon.

A microscopic examination will reveal such characteristics as foraminifera, Glauconite, volcanic ash or other minerals that may be present. The sample is then sacked, labeled and filed away for future reference.

A second sample of about 5 grams is taken, preferably from a point near the center of the core, and boiled with distilled water. The solution is filtered and titrated with silver nitrate in the usual way to determine the percentage of chlorine present.

In the majority of cases the absence or presence of chlorine would indicate the absence or presence of salt water as the case may be. However, instances have been noted where connate seawater, or even salt in crystal form, would give a strong chlorine reaction, although the horizon may contain no water.

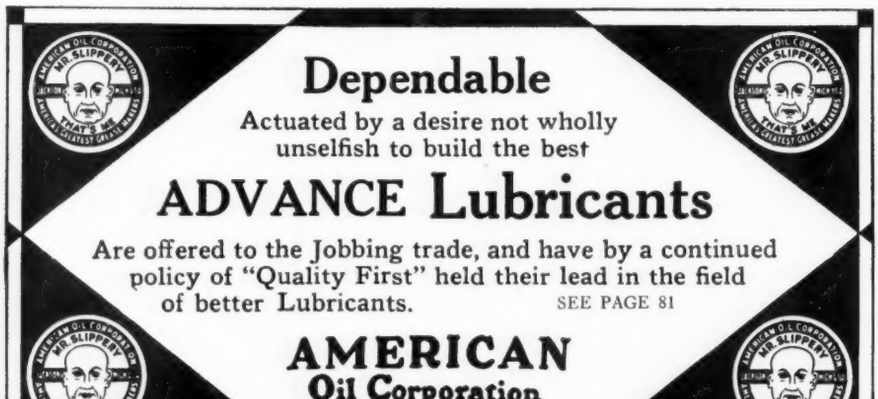
Collection of Drill Cuttings

A convenient method for the collection of cuttings is to place a "T" connection on the return pipe with a bull-plug in one end of the "T". Particles will settle in the closed end of the plug and may be easily collected without disturbing the return flow. A sample is taken for every 10 feet of depth. This sample is washed in clear water to eliminate the contamination by return water, air dried, cooked and labeled, it is then ready for examination in the laboratory.

Inaccuracies are unavoidable owing to the fact that the rate and time of flow varies with the speed of the pump, size and depth of hole and character of formations penetrated. Corrections may be made by calculating the quantity of pump discharge and capacity of open flow space in the pipe, however, more accurate results may be obtained by making actual determination from time to time on the rate of flow from a particular horizon, or by introducing coloring matter in the mud.

Caving material sometimes contaminates our sample, but one soon learns to identify such particles and to determine the exact location of the cave. Considering the shortcomings noted, the limit of possible error is placed at 20 feet; however, with careful work one may secure a complete set of samples which will materially assist in the correlation of sub-surface formations.

Laboratory work on drill cuttings consists in the microscopic examination to determine physical characteristics, mineral content and fossils present. A chemical test may be made by testing with hydrochloric acid to detect the presence and approximate amount of calcareous material. Estimates of sand, shale and clay may be made as directed under the examination of drill samples.


Dependable
Actuated by a desire not wholly unselfish to build the best
ADVANCE Lubricants
Are offered to the Jobbing trade, and have by a continued policy of "Quality First" held their lead in the field of better Lubricants.
SEE PAGE 81
AMERICAN
Oil Corporation
Jackson, Mich.

If You Operate a Filling Station

YOU need this new catalog. 32 pages of detailed information on construction, design, specifications, sizes, and accessory equipment of air compressors for filling tires, operating pumps, cleaning motors and other varied uses of compressed air.

This catalog is so complete in illustration and description that you can select the compressor outfit best suited to your stations.

Champion Air Compressors are made only in one quality, but they are made in sizes that meet every service station requirement.

CHAMPION PNEUMATIC MACHINERY COMPANY

COMPLETE PNEUMATIC EQUIPMENT FOR FILLING STATIONS, GARAGE, SERVICE STATIONS AND TIRE SHOPS

8168 SOUTH CHICAGO AVENUE CHICAGO

Champion Pneumatic Machinery Company
8168 S. Chicago Avenue
Chicago, Ill.

Please send us copy of your catalog containing detailed description of Champion Air Compressors.

Firm Name.....

Address.....

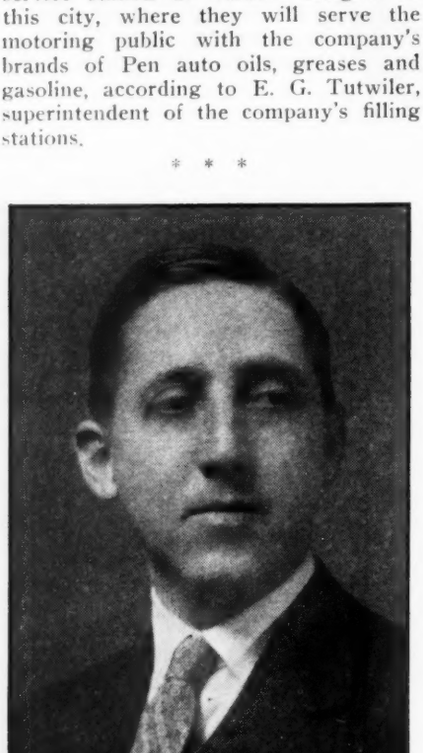
Town..... *State*.....

Attention of..... *Pos.*.....

Here And There

LITTLE ROCK, ARK., March 24.—Pierce Oil Corp. has opened a drive-in service station at Pulaski Heights in this city, where they will serve the motoring public with the company's brands of Pen auto oils, greases and gasoline, according to E. G. Tutwiler, superintendent of the company's filling stations.

* * *



A. REID CHAPPELL
New President of St. Louis Petroleum Club succeeding William G. Jenkin, retired.

* * *

WOOSTER, O., March 24.—Stellar Service Co., which was owned by H. S. Palmer and Earl Strock, is now known as Strock's Service Station. Mr. Strock bought Mr. Palmer's interest in the company on Feb. 10. Mr. Strock and his brother operate a station under the same name at Orrville, O. The company maintains a bulk station at Wooster from which it trucks the gasoline to Orrville.

* * *

WALTON, KY., March 24.—Charles W. Miller, oil salesman, says business looks good in his vicinity for the coming season and that he would like to see the oil companies and their salesmen sell quality oils, and not price.

* * *

FOREMAN, ARK., March 24.—Standard Oil Co. of Louisiana has announced it will erect a bulk and service station at Ashdown, Ark., about 20 miles from here, according to L. D. Carson, agent for the Pierce Oil Corp. at this city.

LOUISVILLE, KY., March 24.—Stoll Oil Refining Co. is erecting two additional service stations in Louisville, which will give it a total of 11 in this city. One of the new stations is in the heart of the wholesale district while the other is in the residential section, reports William A. Stoll, treasurer.

C. C. Stoll, president of the company, who sailed, accompanied by his wife, from New York in November for a trip around the world, is enjoying his trip to the utmost. He has thus far visited Hawaii, China, Japan, the Philippines, Java, India, Egypt, Italy, and other countries. His return to Louisville is expected early in April. Mr. Stoll is also chairman of the board of public works here.

* * *

MADISON, WIS., March 24.—The National Refining Co. maintains two lubricating engineers in two central divisions, W. H. Carr at Peoria, Ill., and R. S. Cadwell at Dubuque, Ia. Mr. Cadwell was formerly associated with the Standard Oil Co. of Indiana. He worked the past week with J. C. Patterson, salesman for the company, at Madison, calling on the smoke stack trade in this vicinity where the company already has contracts.

* * *

SHREVEPORT, March 24.—M. J. Grogan, formerly manager of the Dallas branch of the Acme Petroleum Co., has becomes sales manager of the Louisiana Oil Refining Corp. here. Mr. Grogan will have charge of tank car sales of all Loreco products. Recent enlargements of the company's refineries and the completion of its lubricating oil plant here necessitated the expansion of the company's sales department.

* * *

DAYTON, O., March 24.—The Refiners Oil Co. of this city has temporarily deferred its plans for the proposed office building it was to have erected at Main street and Monument avenue. It will instead erect a service station on this site and work will begin immediately.

* * *

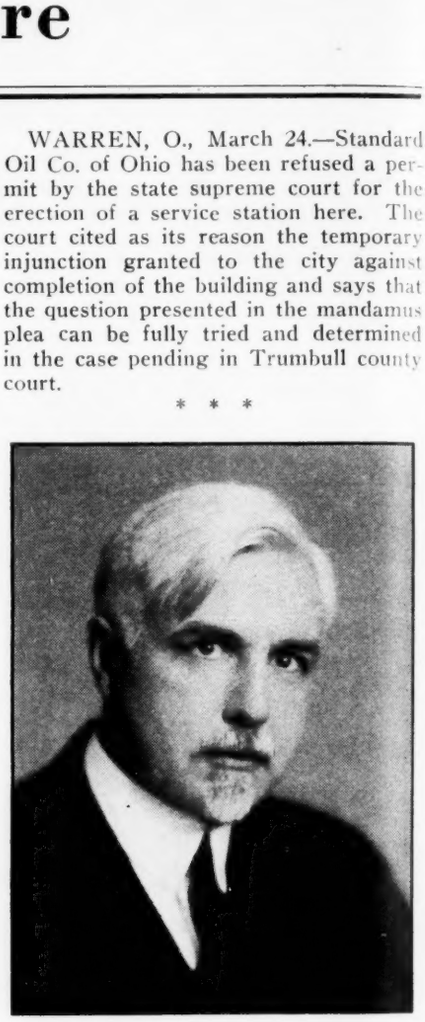
FORT LUPTON, COLO., March 24.—J. S. Penfold, proprietor of Penfold Service Station here, says that, owing to the bad weather, trade is very quiet just now. Mr. Penfold expects to build one or two additional service stations this year.

* * *

PITTSBURGH, March 25.—E. S. Moorhead, for the past three years resident sales manager of the Pure Oil Co. here, has resigned effective March 15, to become general sales manager for the United Fuel & Iron Co., located in the Keenan Bldg.

WARREN, O., March 24.—Standard Oil Co. of Ohio has been refused a permit by the state supreme court for the erection of a service station here. The court cited as its reason the temporary injunction granted to the city against completion of the building and says that the question presented in the mandamus plea can be fully tried and determined in the case pending in Trumbull county court.

* * *



COL. JAMES H. GRAHAM
President of the Indian Refining Company.

* * *

URBANA, O., March 24.—P. P. Stancil expects to have his service station completed in the near future, construction of which was started three weeks ago. He is installing two 1000-gallon tanks, pumps, oil containers and other equipment. An oil pit will be installed at the station for the free use of customers.

* * *

MONTPELIER, O., March 24.—F. M. Guilinger, secretary and treasurer of the Montpeliar Oil Co., has sold out his interest in the Ford Garage here, and will henceforth devote his entire time to the expanding of his oil business. The Montpelier Oil Co. is marketing products of the Indian Refining Co.

* * *

SANDUSKY, O., March 24.—The Paragon Refining Co. has sold its bulk station here to O. J. Myers and Alva T. Smith. The firm will be known as M. & S. Oil Sales and will distribute Sinclair gasoline and motor oils. The company expected to begin operation on March 17.

Gassing Slightly

By Rollin Stone

Exclusive Report On Mr.Stone's Testimony

I WISH to say hesitatingly that I have been deeply humilated at the, perhaps unconscious, slight that the Senate committee which is investigating naval reserves has placed upon me.

Early in the proceedings I packed my bag and prepared to go to Washington in response to the summons which I felt certain would be issued. I had, last July, encountered Senator Walsh at dinner in Great Falls, Mont., and while our conversation was limited to a request from him to please pass the salt, I was certain by the keen look he gave me that he was aware of my identity.

What has happened! I, one of the foremost living authorities on oil, industry, corporate law or what have you, have been ignored while a motley procession of Denver publishers, ex-cabinet officials, lease hounds, government dicks and telegraph operators has filed in and out testifying to all the irrelevant things they could think of. Many of them were very poorly coached, at that.

Not a Thing Hidden

Lest it be thought that I have anything to conceal on the Teapot question, I have written out the testimony as I would have given it. It has been necessary to formulate the questions for Senator Walsh, but these are merely for the purpose of bringing out the full truth. If the committee desires to put my testimony into the record, it has full permission to do so and I can be sworn by telegraph. The testimony follows:

Q. Mr. Stone, what is your name?
A. Stone.
Q. What is your profession?
A. Mennonite.
Q. I mean your occupation.
A. I have a number of occupations.

Primarily, I am an authority on Chinese laundry marks. Before the automobile ruined the livery business, I had charge of two stalls and mangers in a large establishment. Now I am the manufacturer of a proprietary remedy—Stone's Salutary Salve. In the summer I occasionally accept a retainer from some one who owns a large lawn.

Q. (Angrily) Do not attempt to deceive this committee. Is it not true that you played an important part in the development of Teapot Dome? State your answer briefly and with as much evasion as possible.

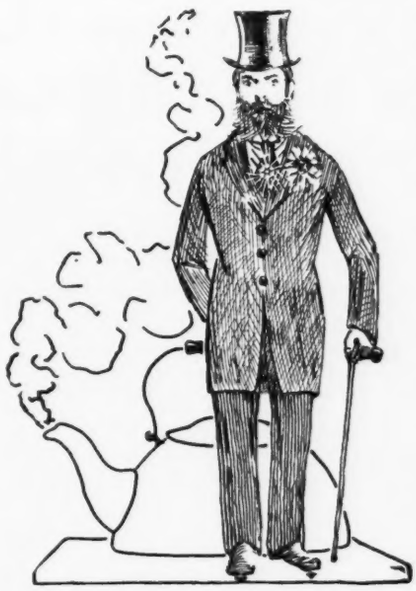
The Trip to Teapot

A. My connection with Teapot began in June, 1922. I traveled from Casper to Teapot by truck—shall I describe that?

Q. Was it a Sinclair truck?

A. No, I was careful at all times to have nothing at all to do with the Sinclair interests. I rode to within five miles of Teapot by truck and, feeling the need of exercise, alighted as soon as the driver became aware of my presence. We were not, I regret to say, friends when we parted.

After walking for some distance toward Salt Creek, where it was rumored that oil had been found, my attention was attracted by a sign which read "Teapot Dome, contents 150 million barrels." Presently I came to the camp.



MR. STONE
(from a recent photograph)

Note expression of willingness to testify or depose as the occasion demands. The artist has supplied Mr. Stone with what was firmly believed to be a Teapot, meaning Teapot dome. (Ha, Ha!)

Q. Describe this camp.

This Technical Talk

A. It was composed of tents. In one, which was labeled "Geological Headquarters," there were several men, judging from the conversation which I could hear. They seemed to be talking over the details of their work. I remember one said something about being an "eighter from Decatur," which I assumed was a technical expression. There was a little discussion of their domestic affairs also, for several times I heard the statement that "baby needs new shoes," and I inferred that they were none too well paid.

Nearby was another tent occupied by engineers. It was separated from that of the geologists by a barbed wire fence. I occupied a bed in this tent for two or three nights.

Q. Was there any discussion among these, now, engineers and those other—what did you call them?

A. Geologists?

Q. Yes, that's it, geologists. Was there any discussion among these men as to the government?

A. Well, I remember a fellow named Tom Haymond said if he owned a thing as windy and hot as Teapot he'd try to unload it on somebody, too. There was quite a lot of talk along this line. Maybe they really were talking about six or eight cows, I am not sure.

Q. What were the geologists doing?

The Saddle Mystery

A. That, I never did find out. Off and on they talked quite a lot about finding a saddle, although they used cars to get around in. There was quite a lot of dispute about where the saddle was and I don't know that they ever did find it. I gathered, however, that the real reason the geologists were there was to look for fossils, for they brought in some each night and talked about them considerably.

Q. Were you with these geologists much?

A. From their standpoint, quite a lot. Actually, however, not more than a few minutes. They sorta withdrew whenever I came in. A fellow named Stanley Herold did most of the withdrawing and the others followed his lead.

Q. So you know no good reason for the geologists being there.

What Geologists Do

A. Well, since that time, I have heard one of the production men say they were sent out to make the locations so they could be sure of getting small wells. The whole thing is rather confusing. These geologists draw what are known as contour lines on a map. These are supposed to mean something or other, although only a geologist knows what it is. Sometimes they go out and squint through a dingus before they draw them, although the engineers at Teapot said the geologists could stay in Casper and draw them just as well. Anyway, the engineers made surveys and divided Teapot off into sections and the geologists put their contour lines on these sections. They claimed they had enough left over to fit up the Elk Hills reserve. That was the reason for the barbed wire between the tents.

Q. Did you ever, at any time, meet the officials of the Mammoth Oil Co.?

A. I met Mr. Connelly, the general manager, in Casper one night.

Q. What were the circumstances of your meeting?

A. It was at a performance of "The Mikado" by the Little Gem Light Opera Association.

Q. Were you seated near Mr. Connelly?

Meeting Mr. Connelly

A. Well, I was seated in various parts of the house. You see, I was permitted to enter that I might see a man I believed to be in the theater. After I got in I couldn't find him, so I decided to stay for the performance. From time to time the person who had bought the

(Testimony concluded on page 95)

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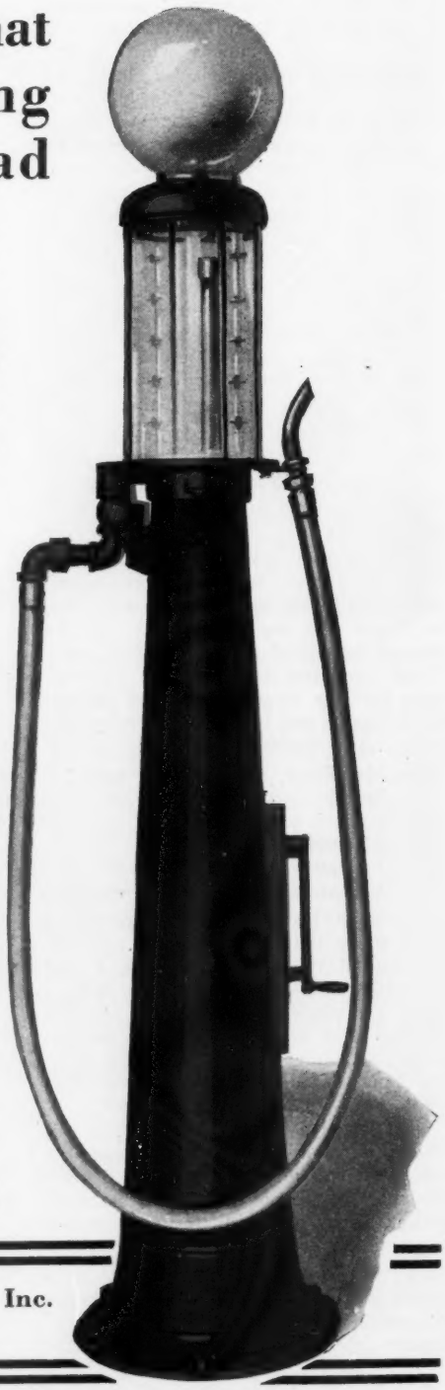

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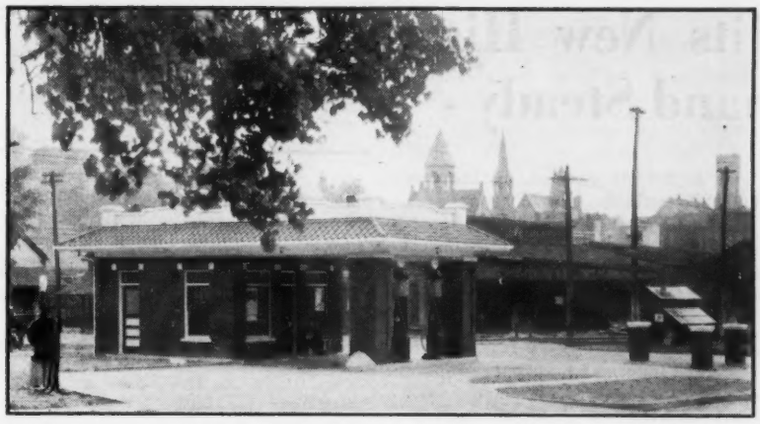

This station made an attractive corner—

Service Station Has Leading Role In Transformation Scene

BURLINGTON, IA., March 24.—Just how much an oil company may improve the appearance of a town is illustrated in the accompanying photographs of the same location before and after the Interstate Oil Co. built its service station on this site. F. C. Threr, president of the company and also president of the Iowa Soap Co., is very proud of his new and up-to-date drive-in station and the transformation effected on this corner lot.

Three of the oldest buildings in the town stood on the property. The center building, dealing in scrap iron, metal, rubbers and rags and the old tumbledown dwelling houses on either side, were an eye sore for the past years. The station, with its new and neat appearance and clean drive-ways is an improvement to the town and undoubtedly adds to surrounding property values.

The company maintains underground bulk storage, including one 22,000 gallon tank and two 11,000 gallon tanks, located at the rear of the station. Railroad tracks pass behind the station.

Out of what had previously been an eyesore

CLEARWATER, FLA., March 24.—Standard Oil Co.'s plant on the Atlantic coast line railway tracks was destroyed by fire recently. Loss was estimated at $50,000. J. E. Wicker, local manager, sustained burns about the head, face and hands. W. F. Barse, who operates a grocery store opposite the plant, was badly burned on the hands when he hurried to the plant to turn off the electric switch which controls the filling apparatus.

CELINA, O., March 21.—Lakeside Oil Co. is extending its distribution of gasoline and motor oils into Lima, O., and adjacent territory, and will complete its first service station in Lima about April 15. The company is now operating one bulk station and three service stations and expects to build another bulk station at Lima as well as five additional service stations, according to C. F. June, an official of the company.

Kentucky Tax Probably Will Be 3 Cents

LEXINGTON, KY., March 24.—The Kentucky house of representatives in session at Frankfort has passed a bill proposing to raise the excise tax on gasoline from 1 to 3 cents a gallon. It has not yet been acted upon by the senate, but reports are that it will and that it will be approved by the governor.

The legislature has not acted on the bill introduced by Leon Lewis of Louisville to abolish county oil inspectors. Inspectorships are about the richest political plums to be handed out, the one for Jefferson county of which Louisville is the seat, paying between $40,000 and $50,000 a year it is said. This one is held by the brother of the Republican leader of Louisville and the national committeeman for Kentucky. Fees are 10 cents a barrel on all oil and gasoline sold within the state.

Oil companies here have refused to aid in the collection of an optional tax of 1 cent a gallon sponsored by citizens of Lexington in an endeavor to raise $6,000 for a road here. However, the companies have contributed generously to the road building fund.

Local Company Installs Tanks

DELPHOS, O., March 25.—The Radiant Oil Co. planned to open its wholesale oil plant here on March 17. Tanks with a total storage capacity of 40,000 gallons will be installed. The company also expects to erect a warehouse here, and a service station at Scott's Crossing, which will be served from Delphos. The company will handle a complete line of petroleum products under its trade name "Charm." It has made arrangements to install eight gasoline pumps locally. Other towns in this vicinity which will be served from Delphos by truck include Van Wert, Middle Point, Venedocia, Ottoville, Spencerville, Ft. Jennings, Rushmore, Rimer, Vaughnsville and Mandale. The company is at present constructing a compounding and lubricant manufacturing plant at Lima.

E. E. Bessire is vice-president and general manager of the company. Dave Heiss, of the Heiss Garage, will act as local manager and have full charge of the business here. Henry Gibb, president and general manager of Gibb & Brown at Lima, has allied himself with the plant now under construction at Lima.

TULSA, March 21.—A. C. Holmes, traffic manager for the Empire Refineries, Inc., has gone to Boston where he will study traffic problems of the new refinery of the Doherty interests at East Braintree, Mass.

Gasoline Output Hits New High In January; Demand Steady

CLEVELAND, March 24—GASOLINE production established a new high record in January reaching a total of 695,322,500 gallons or a daily average of 22,429,758 gallons. This is shown by the figures of the Bureau of Mines. Gasoline imports during the month were 19,309,197 gallons, exports 88,823,007 gallons and domestic consumption 498,160,950 gallons.

Total new supply was 714,631,697 gallons or a daily average of 23,052,635 gallons while domestic consumption and exports totaled 586,983,957 gallons or a daily average of 18,934,966 gallons. Of the output 187 million gallons was added to stocks which on Feb. 1 stood at 1,202,547,390 gallons.

Gasoline output was 5.5 per cent greater in January than in December and 11.5 per cent greater than in January, 1923. Imports were approximately 6,000,000 gallons less than in December but more than 5,300,000 greater than in January, 1923. Total new supply was 12.1 per cent greater than a year ago.

January Demand Holds Up

Total January demand was only 1.25 per cent less than in December in spite of the difference in weather conditions, but 13.2 per cent greater than in January, 1923. Stocks were 19.9 per cent greater than stocks Feb. 1, 1923.

Gasoline stocks were drawn on in Texas during January but in other refining districts there were accumulations. All refining districts increased their output during the month.

The output of kerosene in January was 217,767,931 gallons, a decrease of about 17,000,000 gallons over the December production. Exports decreased about 6,500,000 gallons, amounting to 64,762,389 gallons. Domestic demand for kerosene increased slightly to 122,040,280 gallons, and about 31,000,000 gallons were added to stocks, which amounted to 314,181,465 gallons on February 1.

The production of gas and fuel oils in January was 1,062,892,393 gallons, a slight decrease from the December output. Imports declined from 7,000,000 gallons, amounting to 36,471,249 gallons. Exports of these oils were 109,908,000,000 gallons, a decrease of 40,000,000 gallons from the December figures. The domestic demand was 977,143,731 gallons, an increase of about 25,000,000 gallons over the December demand. About 12,000,000 gallons of gas and fuel oils were added to stocks, which on February 1 amounted to 1,527,346,622 gallons.

Lubricant output decreased slightly in January, production amounting to 94,534,650 gallons. Exports were 25,175,405 gallons, a decrease of 8,000,000 gallons from December exports. Domestic demand for lubricants in January was 67,391,215 gallons, an increase of 14,000,000 gallons, or 26.9 per cent, over figures for the preceding month. Stocks of lubricants on February 1 amounted to 244,755,997 gallons, an increase of 2,000,000 gallons during the month.

A total of 247 refineries reported to the bureau as operating during January at 77.2 per cent of their aggregate daily crude oil capacity of 2,142,222 barrels, running to stills a daily average of 1,653,025 barrels of both foreign and domestic crude oils. This was almost exactly the same rate of operations as in December but an increase of 9.4 per cent as compared with operations a year ago.

Railroads Increase Fuel Oil Use One Fourth

CLEVELAND, March 24—Railroads of the United States having annual operating revenues of $1,000,000 or more in 1923 consumed 47,143,214 barrels of fuel oil in road service, as against 37,287,857 barrels in 1922, an increase of 26.4 per cent, according to the Interstate Commerce Commission. Greatest consumption was in the central western and southwestern regions, as is shown by the following tabulation:

Eastern District:	1923 Barrels	1922 Barrels
New England Region	1,333	48
Great Lakes Region	159,667	154,857
Ohio-Indiana-Allegheny Region	73,310	57,048
Southern District	969,119	775,619
Western District:		
Northwestern Region	4,561,119	2,908,452
Central Western Region	24,272,976	19,597,714
Southwestern Region	17,105,690	13,794,119
Total, United States	47,143,214	37,287,857

The American Petroleum Institute has obtained figures from the principal railroads showing consumption of fuel oil by locomotives in all service to have been 57,641,233 barrels of which 45,413,202 barrels was domestic oil and 12,228,031 Mexican oil. Consumption in various geographical rather than I. C. C. regions, as compiled by the institute, last year was:

District	Domestic Barrels	Mexican Barrels
Eastern	8,106	125,456
Southern	.....	1,151,441
Middle and southwestern	17,286,257	10,951,134
Southwestern Pacific	22,120,633	.....
Northwestern	5,998,206	.....
Total	45,413,202	12,228,031
Total all oils	57,641,233	

Consumption in 1922, according to the institute's compilation, was:

District	Domestic Barrels	Mexican Barrels
Eastern	7,626	99,268
Southern	.....	916,956
Middle and southwestern	11,433,849	11,986,263
Southwestern Pacific	18,398,392	.....
Northwestern	3,786,202	.....
Total	33,626,069	13,002,487
Total all oils	46,628,556	

Roster Of Oil Associations

National Associations

American Association of Petroleum Geologists, Secretary C. E. Decker, University of Oklahoma, Norman, Okla.

American Chemical Society, Petroleum Division, Pittsburgh, Pa. Secretary, George A. Burrell.

American Institute of Mining and Metallurgical Engineers, Petroleum Division, 29 West 39th St., New York. Chairman, E. DeGolyer.

American Oil Men's Association, 10 So. La Salle St., Chicago, Ill. Secretary, John D. Reynolds.

American Petroleum Institute, 15 West 44th St., New York. Secretary, R. L. Welch.

American Society Lubrication Engineers, Monadnock Block, Chicago, Ill. Secretary J. L. Overholt.

Association of Natural Gas Supply Men, 905 Oliver Bldg., Pittsburgh, Pa. Secy. William B. Way.

Association of Natural Gasoline Manufacturers, Room 821, Mayo Bldg., Tulsa, Okla. Secretary, A. V. Bourque.

National Association of Independent Oil Producers, 414 Atlas Bldg., Tulsa, Okla. President, W. H. Gray.

National Petroleum Association, Guardian Bldg., Cleveland, O. Secretary, C. D. Chamberlin.

National Petroleum Marketers Association, Blum Bldg., 624 So. Michigan Ave. Chicago, Ill. President, L. V. Nicholas.

Natural Gas Association of America, 905 Oliver Bldg., Pittsburgh, Pa. Secretary, William B. Way.

Natural Gas & Petroleum Association of Canada, Chatham, Ont., Canada. Secretary, S. A. Morse.

Western Petroleum Refiners Association, 304 Interstate Bldg., Kansas City, Mo. Secretary, Howard Bennette.

* * *

District Producers Associations

Eastern Kentucky Oil Producers Association, Ashland, Ky. Secretary, David Browning.

Gulf Coast Oil Producers Association, 403 Goggan Bldg., Houston, Tex. Secretary, T. L. Smith, Jr.

Independent Oil & Gas Producers Association of North Louisiana, 617 Edward St., Shreveport, La. Secretary, J. T. Tanner.

Mid-Continent Oil & Gas Association, 505 Cosden Bldg., Tulsa, Okla. Secretary, Harry H. Smith.

Mid-Continent Oil & Gas Association, Louisiana-Arkansas Division, 724 Giddens-Lane Bldg., Shreveport, La. Secretary, Joseph B. Elam.

Mid-Continent Oil & Gas Association, Texas Division.

New York State Oil Producers Association, Wellsville, N. Y. President, Lewis H. Thornton.

Northwestern Pennsylvania Oil Producers Association, 78 Main St., Bradford, Pa. President, W. J. Healy.

Ohio Gas & Oil Men's Association, 811 First National Bank Bldg., Columbus, O. Secretary, William H. Thompson.

Okmulgee District Oil & Gas Association, Okmulgee, Okla. Secretary, Charles I. O'Neill.

Osage Oil & Gas Lessees Association, 505 Cosden Bldg., Tulsa, Okla. Secretary, Harry H. Smith.

Pennsylvania Grade Crude Oil Association, 209, Chambers Bldg., Oil City, Pa. Secretary, Rodney J. Alexander.

Rocky Mountain Oil & Gas Association, P. O. Box 1559, Casper, Wyo. Secretary, C. W. Sparr.

West Virginia Oil Association, Fairmont, W. Va. Secretary, Edwin Robinson.

* * *

District and State Jobbers Associations

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Stones Teapot Disclosures

(Continued from page 89)

seat I was in would claim it and I would have to move. I met Mr. Connelly through his claiming the third seat I occupied.

Q. Did he, Mr. Stone, say anything, and if so, what?

A. I decline to embarrass and degrade myself by answering that question.

Q. What was your opinion—didn't it strike you as being unusual?

A. Well, the soprano was no trouble to look at—none at all—but the chorus was terrible.

Q. Mr. Stone, isn't it a fact that you went to Teapot for the purpose of enforcing a claim you had to part of the reserve?

A. That is quite true. I acquired a claim from a sheep herder who had put in a week there with his flock and he represented to me that such occupation gave him the mineral rights. I took my claim to the editor of the Poison Spider Weekly Web and he agreed to assist me in protecting my rights. His name is A. J. Hazlett.

The Editor Compromises

I understand this editor has worked out a deal with the Sinclair people whereby he exchanged my claim for the entire gold and silver rights to the reserve. Something tells me I should have gone to another editor.

Q. Did you, at any time in Wyoming, discover anything unusual about anything at all?

A. A barber told me it was commonly rumored that the Midwest Refining Co. was owned by Standard Oil. I regarded that as quite significant and I suggest that barber be called.

Q. That will be done at once. Now, Mr. Stone, is there anything you have concealed from this committee?

A. Yes, I am claiming part of Naval Reserve No. 4, which is on the north coast of Alaska. I suggest that I be called after that is leased. The editor of the Point Barrow, Alaska, Criterion is looking after my interests there.

PITTSBURGH, PA., March 25.—William P. Dunbar, who for the past four years has been vice president, sales manager and a director of the Penn-Okla Oil Corp., of this city, has severed his connection with that company. Mr. Dunbar has not made known his plans for the future but it is understood he may organize a marketing company to operate in the east. He has been active in the oil industry for the past eight years and is well known among jobbers, marketers and refiners throughout the country. Mr. Dunbar is at present recovering from an illness which has laid him up since January.

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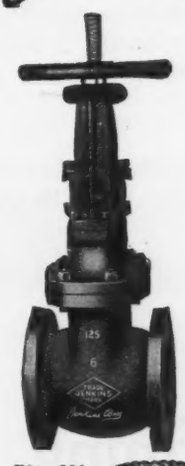
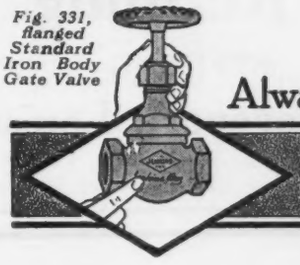


Fig. 331, flanged Standard Iron Body Gate Valve



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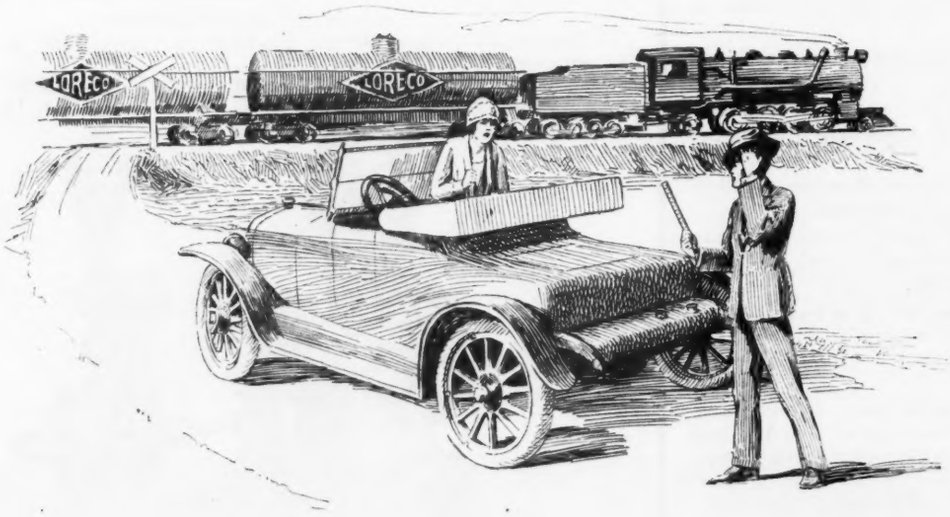

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Louisiana Oil Refining Corporation

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Where The Trade Winds Blow

Gleaned from Reports of the Department of Foreign Commerce at Washington

Italy

WASHINGTON, March 24.—Last June the Italian government and the Anglo-Persian Oil Company made an agreement whereby the Anglo-Persian is going to rent for a period of 30 years the oil storage tanks at Trieste and the land on which they are located.

These tanks were acquired by Italy from Austria as a result of the war and were lying idle until this convention took place.

A new Italian corporation named the Societa Benzina Petroleum has been formed to take advantage of this. It has a majority of the capital (about $100,000) under Italian control and the rest held by the Anglo-Persian. It is expected that this company will confine its activity to the importation and distribution of oils, utilizing the facilities at Trieste. The declared objects of the company, however, include production and refining. The original capital may be increased to $1,000,000.

The Italian government will benefit by this arrangement inasmuch as it was unable to utilize the tanks before.

Canary Islands

Stocks are low here but considerable shipments are expected soon. Consumption is quite steady with a decrease in the use of kerosene. Gasoline imports for 1923 amounted to 16,300 barrels, kerosene 5000 barrels, lubes 950 barrels, and Diesel oil 1000 barrels.

Germany

Germany is Russia's nearest and most important consumer and during 1924 it is expected that the already well developed markets between the two will be extended and increased. This is due to the increasing stocks in Russia.

The United States has a good hold on German business and last year supplied 60 per cent of all imports in petroleum products.

The importance of Polish oils in German markets is expected to decline in proportion to the increase of Russian-German business. Again, Poland's available surplus for export will be of smaller volume because of diminishing stocks and increased domestic consumption.

Unsettled conditions in Mexico, of late, may affect exports to Germany although increasing quantities have been sent ever since the war.

German production in 1923 amounted to 364,000 barrels and because of new wells in the Hanover district 1924 is expected to be a record year. Benzol production this year depends on Ruhr and Rhineland developments. This production amounted to 1,300,000 barrels (reduced on the basis of 7.1 barrels per metric ton) in 1922 but is far less in 1923 due to the effects of the Ruhr occupation.

Rumanian products have re-entered the market since the government has lifted the embargo on exports. Czechoslovakian firms are very active since the Ruhr occupation, they offering mainly benzol. Alsatian goods can be sold under the market due to the clause in the peace treaty which compels Germany to admit products from Alsace duty free for five years.

American refiners still supply the bulk of southern German petroleum requirements, competing with Polish, Rumanian, Czechoslovakian and Alsatian products. Polish lub oils sell at 50 cents less than American but quality is said to be inferior, but on all other products, Polish firms follow closely the prices prevailing at Hamburg for American products which lessens their chances of competition as railroad freights from Poland are very high.

England

Prices are now beginning to advance after a steady decline for the past two or three years. An increase of 4½ cents per gallon on gasoline was announced Feb. 2.

The world-wide range of Royal-Dutch Shell producing fields and refineries is illustrated by their imports of gasoline into Great Britain in 1923. The Shell imported 126,500,000 gallons or 40 per cent of all gasoline shipped in by all other companies.

Shell imports came from the following sources:

	Gallons
Dutch East Indies	46,000,000
United States	26,000,000
Persia	16,200,000
Rangoon	15,000,000
Singapore	11,400,000
Rumania	5,400,000
Mexico	4,000,000
Trinidad	2,000,000
Egypt	1,500,000
Total imports by Royal Dutch	126,500,000

Belgium

Total exports of crude and refined oils from Belgium, including residuum, in 1923 were 645,388,290 gallons, an increase of 128,460,064 gallons over 1922, or 24.8 per cent. Very small quantities were exported to the United States.

Fuel oil exports of 26,493,517 gallons in 1923 showed greatest increase, 23,497,845 gallons or 751.6 per cent. Gasoline exports increased 206.1 per cent although volume was not large, shipments amounting to but 419,500 gallons, a gain of 282,811 gallons over 1922.

Crude oil exports showed greatest decrease in percentage although volume was small. In 1923, 601,738 gallons were exported as compared to 4,843,149 gallons in 1922, a decrease of 87.5 per cent.

Lubricating oil exports totaled 114,340,446 gallons in 1923 as compared with 354,374,431 gallons in 1922, a loss of 68.4 per cent.

Exports of kerosene the last year were 64,083,376 gallons, an increase of 18,937,300 gallons over 1922, or 41.9 per cent.

Total Belgian imports for 1923 exceeded 4,555,000,000 gallons, a gain of 1,451,000,000 over 1922. The United States exported over 3,128,000,000 gallons of this amount.

It has been estimated that Belgium will import during the current year between 50 and 60 per cent of its total gasoline supply from the United States; about 75 per cent kerosene; 85 per cent lubricating oil and 55 per cent of its fuel oil supply.

Bolivia

Congress recently approved a law affecting exploitation on government reserves when in partnership with the state.

It says that exemption from all national, departmental or municipal taxes on contracts which permit drilling on government reserves will be valid. But the royalty to the state on gross production, the general tax on mining profits and the surface taxes on the claims will be continued.

Peru

A new tax law, applicable in the province of Canete, has been reported passed by the Peruvian Congress, which amounts to a levy of about 25 cents on every 10 gallons of gasoline, about 12½ cents on the same amount of kerosene and 10 cents on gas oil. Revenue from tax is for upkeep of a hospital in that province.

Argentina

The petroleum division has on file a copy of "Boletin Oficial" of the Republic of Argentine containing the full text of two decrees, effective Jan. 20, covering the exploration rights of individuals or companies wishing to search for petroleum. The first decree sets aside three large areas in Patagonia in which no exploration rights will be issued to any one until the government has made its official explorations. The second decree defines the regulations under which exploration rights are to be governed.

Dutch East Indies

Twelve prospecting permits were granted during November, 1923, five of which were assigned to the Batavia Petroleum Co. and one to the Biting Petroleum Co. Remaining permits were granted to private parties for areas near Sideardjo and Modjoperto and near Gorontalo, Island of Celebes.

—Another
L-U-C-E
Oil Display
TRIUMPH

Yes. Luce has scored again. This compact folio is being acclaimed by oil salesmen everywhere as one of the most satisfactory cases ever designed. It makes oil sales easy and sure by insuring an efficient, quality presentation.

No. 302 Closed. 15x10x5 inches.
Fine Smooth Black Cowhide

No. 302 Inner Case.
Shows your oil at its best

No. 302 is indeed a master oil folio. Case has three pockets, stiffened bottom reinforced with metal studs, extension lock, strong comfortable handle. Made from the best 6-oz. smooth black cowhide. Bottle case is lined with red velvet and has a separate space for each of the six 4-oz. cut-bottom bottles and five ½-oz. grease jars. Bottles have metal capped corks. Two inner cases may be carried if desired.

No. 302 Complete..... $15.25
Folio Only..... 10.60
Case with bottles 4.65
LESS USUAL DISCOUNTS

FREE—Your name embossed in gold on every case without charge. Let us send this case to you today for your inspection and approval. If not more than pleased send it back at our expense and you will not be out a cent. You'll be delighted.

LUCE
Trunk Company
Sample Luggage for all lines.
We build and design to order.
618 Delaware St. Kansas City, Mo.

Oil Trademarks For Copyright

Nujol

Ser. No. 190,746 (Class 15, Oils and Greases.). Standard Oil Company, (New Jersey), Bayonne, N. J. Filed Jan. 12, 1924.

Particular description of goods.—Lubricating Oils.

Claims use since Feb. 27, 1915.

DR E W POPY DR V S.

Ser. No. 183,545. (Class 6, Chemicals, Medicines and Pharmaceutical Preparations.) Weis and Serravallo, Trieste, Italy. Filed July 21, 1923. Particular description of goods.—Reactive Fluid to Judge Rapidly of the Fitness of Motor Fuels.

Claims use since December, 1922.

Apex

Ser. No. 175,184. (Class 15, Oils and Greases.) Cassetty Oil and Grease Co., Nashville, Tenn. Filed Jan. 27, 1923. Particular description of goods.—Cream-Separator Oil, Axle Grease, and Lubricating Oil For Automobiles.

Claims use since 1887.

LOILOIL

Ser. No. 188,625. (Class 15, Oils and Greases.) Canadian Independent Oil, Limited, East St. John, New Brunswick, Canada. Filed Nov. 21, 1923.

No claim is made to the exclusive use of the word "Oil." Particualar description of goods.—Motor Oils and Lubricants.

Claims use since Sept 1, 1923.

SILVERTOWN

Ser. No. 191,146. (Class 15, Oils and Greases.) Sun Oil Compasy, Philadelphia, Pa. Filed Jan. 22, 1924. Particular description of goods.—Lubricating Oils, and Particularly Marine-Engine Oils.

Claims use since on or about Mar. 1, 1923.

INDIVIDUAL QUALITY — NEW NAVY AIR LINE GASOLINE — SLOANE-FORSBERG OIL CO.

Ser. No. 187,022. (Class 15, Oils and Greases.) Sloan-Forsberg Oil Co., Oklahoma City, Okla. Filed Oct. 15, 1923.

No claim is made to the words "New Navy Gasoline" and "Individual Quality" apart from the mark shown on the drawing. Particular description of goods.—Gasoline and Motor Oils.

Claims use since Jan. 1, 1922.

77S SLL SLL

Ser. No. 191,169. (Class 37, Paper and Stationery.) Continental Paper & Bag Mills, New York, N. Y. Filed Jan. 23, 1924. Particular description of goods.—Lubricating Oils, and Particularly Marine-Engine Oils.

Claims use since on or about Jan. 9, 1924.

UNAMEO

Ser. No. 188,577. (Class 15, Oils and Greases.) Union Oil Company of California, Los Angeles, Calif. Filed Nov. 19, 1923. Particular description of goods.—Lubricating Oils and Fuel Oils.

Claims use since Oct. 17, 1923.

ELDORADO

Ser. No. 180,087. (Class 15, Oils and Greases.) Standard Oil Company of New York, N. Y. Filed May 2, 1923. Particular description of goods—Petroleum and Products of Petroleum with or without Admixture of Other Materials

for Illuminating and Heating, Lubricating, Greasing, Solvent, Waterproofing, Rust Preventing, Surface Preserving and Tempering.

Claims use since 1894.

Ser. No. 184,854. (Class 15, Oils and Greases.) Hot Point Oil & Supply Company, Harrisburg, Pa. Filed Aug. 22, 1923.

The crosshatching in the drawing indicates the colors of blue, pink, green, yellow and gold. Particular description of goods.—Ginger Ale.

Claims use since 1890.

"KLEEN KUT"

Ser. No. 187,781. (Class 15, Oils and Greases.) D. A. Stuart & Co., Chicago, Ill. Filed Oct. 31, 1923. Particular description of goods.—Base Oil for Cutting Fluids and Coolants.

Claims use since March, 1914.

* * *

The preceding are trade-mark applications pertinent to the oil industry pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Barrister Building, Washington, D. C., trade-mark specialists.

As an additional service feature to its readers, this paper gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering. You may communicate with the Editor of NATONAL PETROLEUM NEWS or send your inquiry direct to the National Trade-Mark Company, stating that you are a reader of this journal.

Spring Activity At Wainwright

OTTAWA, CANADA, March 21.—Initial indications of the spring activity in the Irma-Fabyon-Wainwright oil field has been the arrival of two carloads of steel casing for British Petroleums, Ltd. Five more carloads are loading at Tulsa, Oklahoma, for the same company. J. O. Williams, geologist for Continental Oils has chosen his drilling sites for the season and the Imperial oil is also said to have arranged its year's drilling.

Almost every week some splendid opportunity for enlarging your business or making more money is offered on our classified advertising page. Don't fail to turn to it every week to see for yourself whether there is something in it to interest you.

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LUBRICATING OILS

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HIGHLY FINISHED-STRAIGHT RUN

ZERO COLD TEST

INQUIRIES SOLICITED

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Vogt Products For The Oil Refiners

We manufacture Paraffine Wax Presses, Distillate Chilling Machines, Stills, Auto Truck Tanks, Special Refinery Equipment, Boilers, Refrigerating Machinery, Drop Forged Steel Valves, and Fittings. Bulletins on request.

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Incorporated
Louisville, - Ky.

Branch Offices:
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A Brown Instrument board in a large western refinery.

Completely Equipped

—and all set for Continuous operation. Throughout the oil industry you will find refineries equipped with Brown Instruments. The vital importance of maintaining the exact temperatures and pressure demands the use of instruments which are both accurate, dependable, and rugged—right on the job all the time to insure and boost the throughput.

You get this when you put Brown Pyrometers (equipped with Brown Automatic Cold Junction Compensation) on your stills. The Brown Portable Precision Potentiometer is most desirable for checking and laboratory purposes around the oil refinery. This instrument is ex-96 in. long. Brown Recording tremely accurate—having a scale Thermometers, Recording Pressure Gauges, Resistance Thermometers, and the New Brown Electrical CO_2 Meter are characterized by the same high accuracy, dependability and sturdy construction as Brown Pyrometers.

Drop us a line now and ask for a suggestion on the Brown equipment best suited to meet your individual requirements. You should at least send for the following catalogs—

Pyrometers	Catalog # 21
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Resistance Thermometers	Catalog # 91
Tachometer	Catalog # 43

Address The Brown Instrument Company, 4518 Wayne Avenue, Philadelphia, Pa., or one of our district offices located in New York, Boston, Pittsburgh, Cleveland, Columbus, Detroit, Chicago, St. Louis, Birmingham, Denver, San Francisco, Los Angeles, Montreal.

Brown Pyrometers

Most used in the world

On The Lazy Bench

In the First National

The trig little woman with the horticultural display on her head stepped upon the pay-right-now-while-we've-got-you car.

The conductor held out his hand for his fare.

"You'll have to wait until after I get inside," she told him.

"Oh, no," insisted the faretaker, "you have to pay right here on these cars."

"But I tell you I can't pay you until after I get inside," repeated the little woman.

"Yes, but——"

"Here!" interrupted a big man who had climbed on behind the woman. "Just take her fare out of this. I know how it is. My wife carries her money that way."

o—o—o

He took his girl out for a ride—
One cylinder was missing.
But the silly stiff
Never knew the "diff,"
He was so busy—keeping an eye on traffic.

o—o—o

Most Likely

Dear Editor: "I went out with a young man a few nights ago, and drank two gin fizzes, five glasses of red wine, a taste of moonshine and two coffee royals. Did I do anything wrong?"—Mabel.

Answer: "You probably did."

o—o—o

Get To Work

"An' what's your job around here, young fellow?" asked the farmer of an official in a big city railroad station.

"I'm the train caller," answered that dignitary.

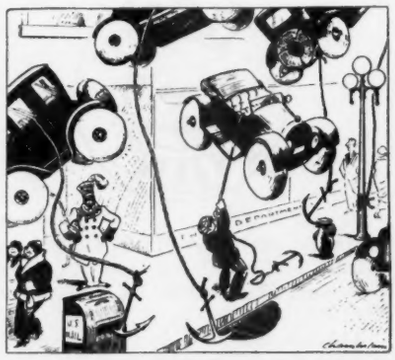
"Well, call me one, then. I'm in a hurry."

o—o—o

Efficiency

Rowley: "You ain't one of them blokes wot drops their tools and scoots as soon as the whistle blows, are you?"

"Red": "Not me. Why, I often have to wait for five minutes after I put me tools away before the whistle blows."



Plenty of parking space now! Just blow up your "balloon" tires a little tighter and throw out your anchor.
—The Ventura Mission

Not Too Early

Bystander: "I observe that you treat that gentleman very respectfully."

Garageman: "Yes, he's one of our early settlers."

Bystander: "Early settler? Why, he's not more than forty years of age."

Garageman: "That may be true, but he pays his bills on the first of every month."

o—o—o

Jackson—I have a Ford, what car have you?

Everett—A Packard.

Jackson—Well, that's a good car, too!

o—o—o

Opinions Furnished for Him

It was during the impaneling of a jury in a New England town that the following colloquy occurred between the magistrate and a talesman:

"You are a property holder?"

"Yes, your honor."

"Married or single?"

"I have been married for five years, your honor."

"Have you formed or expressed any opinion?"

"Not for five years, your honor."

o—o—o

"In Mournful Numbers"

He was newly arrived in this country and was none too familiar with the use of the telephone. So he took the receiver and demanded:

"Aye vant to talk to my wife."

Central's voice came back sweetly: "Number, please?"

"Oh," he replied, perfectly willing to help out, "she bane my second vun."

o—o—o

An old maid likes a parrot because it is the closest thing she can get to a stork.

BOWSER
ESTABLISHED 1885

WHATEVER your need, Bowser has a pump that is exactly right—you don't have to fit your problem to the pump!

Visible or piston-type, these Bowser pumps are accurate. This means that you give away no gas—and the customer is always satisfied!

The present pumps are the biggest value Bowser has ever built—every pocketbook, every demand for speed, and volume, can be satisfied.

Bowser lubricating outfits, old and new, are equally dependable and satisfactory, and cover every demand for variety and extent of service.

The *complete* Bowser line—a pump for every need—look it over well, for Bowser builds for service and satisfaction, and challenges the world on price, as on performance.

BOWSER
ESTABLISHED 1885

ASK YOURSELF THIS QUESTION:

"Is it good business to buy a pump that costs more for upkeep and operation, when I can buy a genuine Bowser, guaranteed as to materials and workmanship? Don't I know by experience that the quality article always costs less in the long run?"

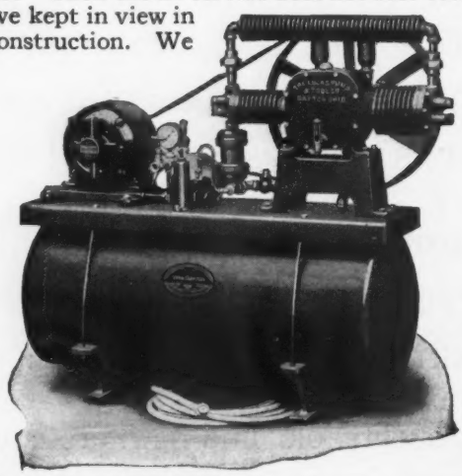
"DAYTON"

AIR COMPRESSORS
Single Stage and Two Stage

Technical Knowledge combined with thorough mechanics have enabled us to solve the problem of Air Service for you. Dayton Compressors have fewer working parts, which assures a lower first cost and a freedom from repairs. This spells economy.

FILLING STATION PROFITS

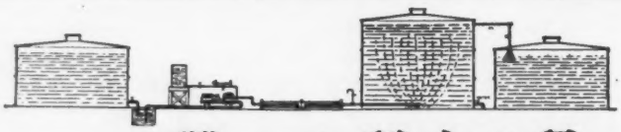
are increased by Air Service—when the air service does not cost too much. That is the point we kept in view in simplifying compressor construction. We guarantee efficiency at lowest operating cost.



Less Oil—
Fewer Repairs

Write for Bulletin No. 25.

The Lucas Pump & Tool Co.
436 Valley St.
Dayton, Ohio



Tret-O-litE

Reg. U. S. Pat. Off.

PROCESS PATENTED. The Barnickel processes for treatment of cut oil and other petroleum emulsions by the use of chemical agents are protected by valid process patents issued by the United States and foreign countries.

The purchaser of TRET-O-LITE is licensed to practice the Barnickel processes to the extent permitted by the quantity of TRET-O-LITE purchased. He is not licensed to use any other chemical covered by the Barnickel patents, either alone or with TRET-O-LITE.

WM. S. BARNICKEL & CO. **St. Louis, Mo.**

Sunshine Products

High Grade and Uniform Quality

60-62 Gravity, S R Gasoline, 400 End.

58-60 Gravity, S R Gasoline, 437½ End, 140 Initial.

56-58 Gravity, S R Gasoline, 450 End and better.

54-56 Gravity, S R Gasoline, 460 End and better

Kerosene, Naphtha, Gas Oil and Fuel Oil

SUNSHINE STATE OIL & REFINING COMPANY

(Incorporated)

Offices: Suites 1019-1025 American National Bank Bldg., Wichita Falls, Texas

Long Distance Phone LD-43

Petroleum Associations

(Continued from page 92)

tary, R. E. McKellar, Diamond Oil Co., Memphis, Tenn.

Independent Petroleum Marketers Association of California, Inc., 930-1 Marsh-Strong Bldg., Los Angeles, Calif. Secretary, H. H. Maxson.

Independent Oil Marketers Association of Atlanta, Ga., Atlanta, Ga. Secretary, J. H. Smitha, Community Oil Co., Atlanta.

Indiana Independent Petroleum Marketers Association, 307 No. Pennsylvania St., Indianapolis, Ind. Secretary, W. H. Trimble, Western Oil Refining Co., Indianapolis.

Iowa Independent Oil Men's Association, Des Moines, Ia. President L. F. Kuehnle. P. O. Box 57, Dubuque, Ia.

Kansas Oil Men's Association, 422 Union National Bank Bldg., Wichita, Kans. Secretary, A. W. Long, Manhattan, Kans.

Kentucky Oil Men's Association, Inc., Trust Co. Bldg., Lexington, Ky. Secretary, Thomas S. Scott.

Michigan Independent Oil Men's Association, Grand Rapids, Mich. Field Secretary, James A. Gilmore.

Minnesota Petroleum Association, 638 Builders Exchange, Minneapolis. Secretary, Paul E. Hadlick.

Missouri Oil Men's Association, 627 New York Life Bldg., Kansas City, Mo. Secretary, A. A. Smith.

Montana Oil and Gas Association, Helena, Mont. Statistician, Carl C. Adams.

Nebraska Independent Oil Men's Association, Lock Box 446, Omaha, Neb. Secretary, Charles M. Sutherland.

New York State Petroleum Marketers Association, 1201 So. Salina St., Syracuse, N. Y. Secretary, Joseph H. Brink.

Northwest Independent Oil Association, Lewistown, Mont. Secretary, C. H. Brown.

Ohio Petroleum Marketers Association, 532 E. Broad St., Columbus, O. Secretary, C. A. Laubach, Columbus Oil Co., Columbus.

Oil Men's Association, Cleveland, O. President, George H. Russell, Lennox Oil & Paint Co., Harvard and Broadway, Cleveland, O.

Oklahoma Oil Jobbers Association, Fidelity National Bank Bldg., Oklahoma City, Okla. Secretary, C. M. Kinney.

South Dakota Independent Oil Jobbers Association, Secretary, F. H. Buehler, Dacota Oil Co., Madison, S. D.

Southern Petroleum Dealers Association, Secretary, W. J. Keenan, Columbia, S. C.

Southern Petroleum Jobbers Association, Columbia, S. C. Secretary, D. C. Patterson, Camden, S. C.

Texas Oil Jobbers Association, Fort Worth, Tex. Secretary, Albert Walters, Gasoline & Petroleum Co., Taylor, Tex.

Western New York Gasoline Dealers Association, care of C. H. Quinn, Vice President, Rochester Motor Terminals, Inc., Rochester, N. Y.

Wisconsin Independent Oil Jobbers Association, Oconomowoc, Wis. President, S. S. Cramer, Wadhams Oil Co., Milwaukee, Wis.

• • •

Petroleum Clubs

Oil Trade Association of Philadelphia, 47 North 2nd St., Philadelphia, Pa. Secretary, J. H. Stevenson.

Oil Trades Association of New York, Inc., 35 So. William St., New York City. Secretary, Joseph C. Smith.

Pittsburgh Petroleum Club, 216 Bessemer Bldg., Pittsburgh, Pa. Secretary, James C. Myers.

St. Louis Petroleum Club, 1430 So. Vandeventer Ave., St. Louis, Mo. Secretary, Charles Osthoff, Jr.

• • •

District Technical Associations

Technical Club of Oklahoma, 208 Fisher Bldg., Tulsa, Okla. Secretary, R. J. Ginter.

Increased Facilities!

Greater Production Enables Us to Give Better Service

The demand for Cincinnati Globes *necessitated* increased facilities for greater production. The improved service on our orders will earn, more than ever, the esteem of the leading oil companies and gasoline pump manufacturers who have recognized the *superiority* of Cincinnati Globes by putting these *permanent* advertisements of their product on the majority of the pumps in this and foreign countries.

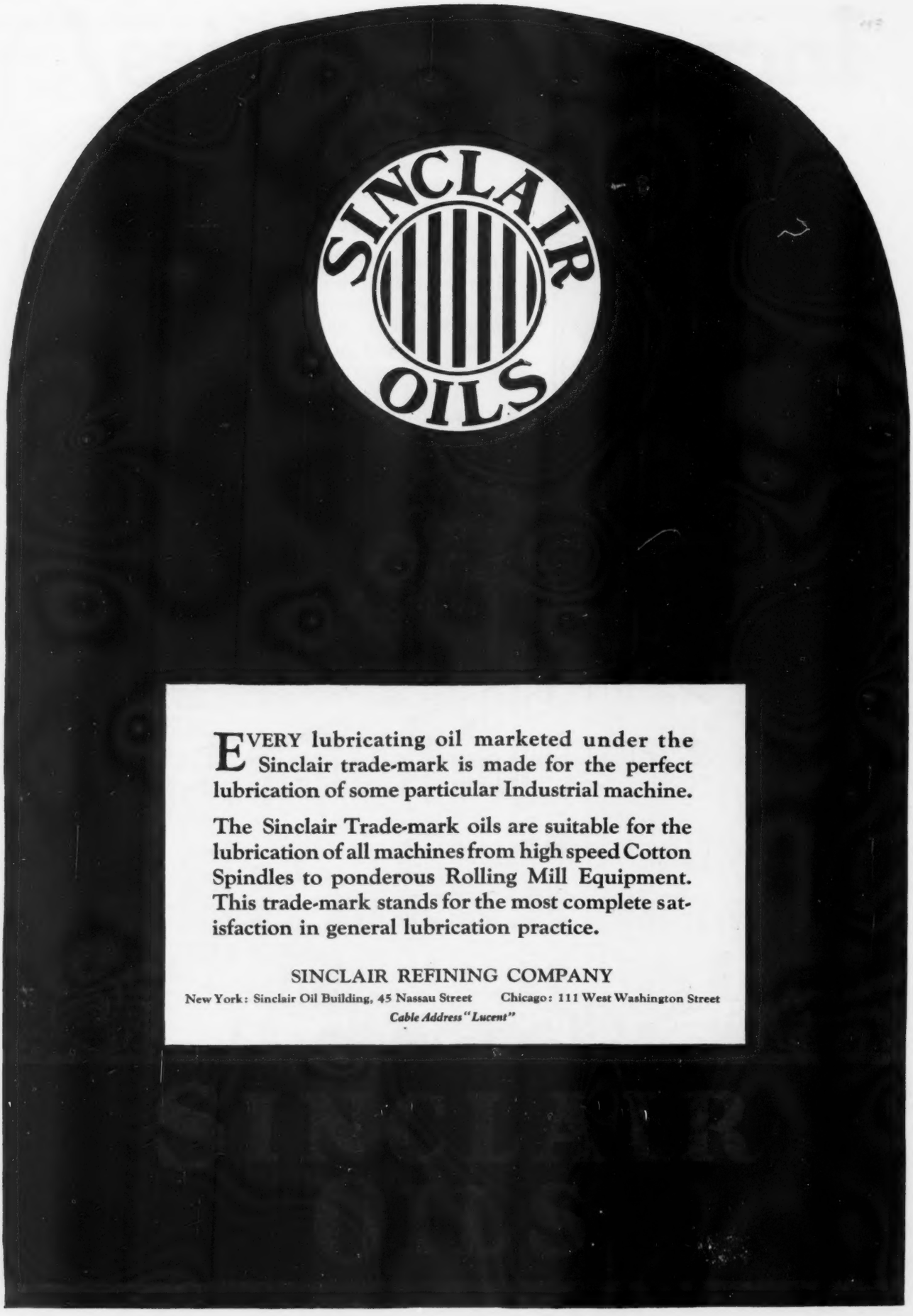
You can *count* on our service—and, you can also count on the unswerving high quality and excellence of Cincinnati Globes.

Write us today—let us quote you on your present trade mark—or on an exclusive design which we will create, without charge, for your use.

THE CINCINNATI ADVERTISING PRODUCTS CO., Cincinnati, O.

OUR NEW PROCESS overcomes fading, flaking, peeling and chipping off and insures a permanence and a durability of colors unequalled by any similar product on the market.

CINCINNATI GLOBES Sell More Gasoline and Oils



EVERY lubricating oil marketed under the Sinclair trade-mark is made for the perfect lubrication of some particular Industrial machine.

The Sinclair Trade-mark oils are suitable for the lubrication of all machines from high speed Cotton Spindles to ponderous Rolling Mill Equipment. This trade-mark stands for the most complete satisfaction in general lubrication practice.

SINCLAIR REFINING COMPANY

New York: Sinclair Oil Building, 45 Nassau Street Chicago: 111 West Washington Street

Cable Address "Lucent"

REFINERY-TANK WAGON MARKETS

Exporters Have Carried Burden Of March Gasoline Market

Staff Special

TULSA, March 22

EXPORTERS again have been the main support of Mid-Continent refinery markets during a week of negligible domestic business. Buyers have placed orders in Oklahoma, Kansas and north Texas for some Navy gasoline and larger quantities of 64-66, 375 end point material to move before April 10.

Export movement of gasoline from the Mid-Continent during March has reached an imposing total when purchases of all buying agencies are considered. It has been almost entirely due to the export outlet that motor fuel prices have been held at their present level.

A survey of Oklahoma, Kansas and Texas refineries conducted today by NATIONAL PETROLEUM NEWS indicates that export purchases for the month have approximated 3,350 cars, more than 100 cars per day.

Western Refiners Survey

The Western Petroleum Refiners Association has just issued a bulletin covering activities of 138 refineries in the Mid-Continent for four weeks ended March 8. The report shows that for approximately the month of February gasoline shipments of the group of refineries totaled 69,206,604 gallons. The March export shipments referred to above has thus represented 38 per cent of the February shipments of the plants reporting. Another indication of the importance of export movement from the Mid-Continent is seen in the fact that gasoline shipments increased 17.4 per cent during the week ended March 15, over the previous week, and 4.3 per cent during the week ended March 8, as compared with the last week in February.

Carson Petroleum Co. has been one of the heaviest purchasers of Mid-Continent gasoline during March. That company alone has bought approximately 11,000,000 gallons of gasoline and 1,000,000 gallons of kerosene for March delivery. A large part of the Carson gasoline purchases have been of 64-66, 375 end point gasoline as has been the case with other exporters. The company bought roundly 4,000,000 gallons of new Navy during the month.

Keeps Markets Steady

Carson has probably been the greatest single factor in keeping markets steady during the month. Its orders have been scattered among a large number of plants in all parts of the field so that its buying has had the best possible effect in relieving refineries who were pushed for storage room or current operating funds.

Discussing the export situation H. E. Brandli, vice president and general manager, said today that it had given his company a great deal of satisfaction to have been able to assist Mid-Continent refiners during the slack domestic buying.

Sinclair Refining Co. purchased around 125 cars of 64 gasoline in north Texas this week and a slightly smaller amount in Oklahoma. That company has purchased around 500 cars of gasoline for March delivery from Oklahoma and Kansas refiners and a similar amount in Texas.

Royal Dutch-Shell interests have bought 300 cars of gasoline in the entire field and the Dingwall Petroleum Products Corp. bought 375 cars which was loaded out of Gulf ports on March 15.

Atlantic Becoming Factor

The Atlantic Refining Co. gives promise of becoming an important buying factor in the Mid-Continent in the future. Its offices have just recently been opened in Oklahoma and north Texas but a fairly steady stream of gasoline has been moving to Gulf ports for export as a result of its buying. It is estimated that Atlantic purchases in Oklahoma and Kansas have exceeded 3,000,000 gallons of Navy and 64-66 this month. The company has shown some interest in nearly every offer of gasoline made to it.

Sinclair Refining Co. is reported to have paid around 13⅜ cents per gallon for 50 or more cars of 64 gasoline this week. Another exporter paid 13½ cents on at least one order. Navy for export has been bringing 10½ and 10¾ cents per gallon.

Navy for domestic shipment has been bringing approximately the same prices as those paid by exporters. Refiners with lighter grades of gasoline which will not meet export specifications have been accepting slightly lower prices than the exporters have been willing to pay.

Spot sales of gasoline during the past week have been almost nothing. Contract shipments have largely ceased as well. Earlier in the month jobbers were taking out their gasoline but found themselves unable to unload the cars when they arrived. Now they are asking refiners to delay shipments until business picks up.

Refiners in the Mid-Continent still display the greatest optimism over prospective business this year. They are planning ahead for the summer and trying to find some way to scrape through the next few weeks as best they can.

Refiners Seek Crude

An indication of the general thought of refiners as well as producers is seen in the sale of Osage oil leases held this week at Pawhuska. It was evident from the strenuous bidding at new high records that producers and refiners feel that they must have oil without fail.

An indication of the faith of the Prairie Oil & Gas Co. is seen in the active way in which it took part in the bidding. On every important Burbank tract the Prairie was an active bidder to a point far above past high records. It bought one expensive tract.

Cosden Oil & Gas Co., producing division of Cosden & Co., surprised many by the spirited way in which it bid and the high prices it paid for Burbank acreage. Midland Oil Co. (Empire) was another Mid-Continent refiner to pay high prices for an assured supply of oil. It is generally conceded that both Cosden and the Empire have been drawing on their storage of crude for current refinery runs recently.

There is a general feeling among refiners as well as producers that Mid-Continent crude will be advanced again by the Prairie within the next few weeks. Some look for the highest grade to bring $2.50 per barrel shortly after the first of April.

April Quotations Scarce

With higher crude costs staring them in the face and no improvement in sight for refined oil markets for from three weeks to a month, refiners are somewhat at sea over what their selling policy shall be for April. Thus far a little gasoline has been offered for delivery over the first 10 to 15 days of April at prices about in line with the spot market today. Very few refiners are willing to quote a price for delivery over all of April. Those who have offered such quotations, have asked substantial advances over the spot market.

Natural gasoline has been quiet again this week with some reduction in the scale of prices on all grades. One of the larger refineries of the Mid-Continent has been buying 80-88 gasoline on the spot market for storage. This

Here's the Best Paying Fastest Selling Line

JUSTFINE Products

The progressive and aggressive dealer looking for a permanent and dependable source of supply cannot afford to overlook the profit-possibilities of the JUSTFINE LINE—a complete line of extra-good refinery products. It is the claim of our dealers that the JUSTFINE LINE is the best paying, fastest selling line in the field; hence, once an OIL CREEK dealer—always an OIL CREEK dealer.

Official insignia of Pennsylvania Grade Crude Oil Association

Guaranteed 100% PURE PENNSYLVANIA OIL

The highest grade oil in the world
Permit No. 6

In particular, our Low Cold Test Neutrals are the best by actual test. Comparisons may be odious (to our competitors!) but in any fair and exacting test our Neutrals show a marked superiority over all competition. Justfine Motor and Tractor Oils top the quality list of motor lubricants.

Cash in on the Spring Tractor business with our 45-46 or 47 gravity, Water White Kerosene. Your trade will appreciate your foresight in securing for them this Top Quality Kerosene.

May we quote you on your requirements?

OIL CREEK REFINING COMPANY

Titusville, Pennsylvania

buying has provided some outlet for those manufacturing not under contract who are not storing.

Kerosene movement has not been good. Spring plowing is not under way and jobbers have no place to put kerosene until their tank trucks can get out into the country on better roads. Some offers of kerosene over April have been made at slight concessions under the present spot prices.

Wax is still extremely scarce. Offers moved up to 4⅞ cents per pound have not been sufficient to bring any more goods on the market. Exporters are active in searching for additional goods.

Cylinder Stocks Active

Cylinder stocks continue active with prices being advanced. For medium filtered stocks buyers have paid as high as 20 cents per gallon this week and olive green stocks have brought 10 cents. Neutral oils have been quiet with no apparent change in prices.

Fuel oil activity continues largely centered on the needs of railroads. One line was buying on the spot market this week and another was in the market for an additional contract. A sharp decline in coal prices at the mine in central fields have not served to strengthen oil in its competition with coal for industrial purposes.

It is apparent to Mid-Continent refiners that they must rely on gasoline to carry the burden of high crude costs this summer, aside from the aid which will be given by railroads on their sliding scale contracts which are based on crude.

One refiner in Oklahoma has virtually abandoned the manufacture of road oils since the last advance in crude when it was found impossible to advance road oil prices in line with costlier crude. It is understood that the refiner is leaving the road oil in his fuel and selling it to one of the railroads rather than work it down to road oil specifications at prices ranging from $1.25 to $1.40 per barrel.

TULSA, March 25.—The Kendrick Oil Co., with offices here, has just been awarded the gas oil contract for Detroit, Mich., by the Detroit City Gas Co., for a period of six months. Kendrick has at the present time contracts for Memphis, Tenn., Des Moines, Ia., Milwaukee, Wis., and others, according to C. Kendrick, president.

Regulate Service Stations

MT. VERNON, O., March 24.—An ordinance regulating location and operation of service stations has just been passed here, to become effective within 30 days. It requires that no gasoline or oil filling station or storage tank shall be located within 100 feet of the curb and that no drive-ways can be maintained from the street over the curb or sidewalk to a station when one-half of the buildings on both sides of the street for a distance of 500 feet in any direction, are used for residences, without first securing the written consent of three-fourths of the property owners.

This ordinance does not apply to those stations that have been erected prior to the passage of the law.

NEW YORK, March 25.—William A. Ward has just been appointed American representative of "Debag," Deutsche Betriebstoff Aktiengesellschaft (German Motor Fuel Corp.), with main offices at Dresden, Saxony, ocean terminal at Hamburg, and distributing stations throughout Germany. Mr. Ward's office is located in the Produce Exchange Bldg. of this city.

Mid-Continent Refinery Operations Week Ending Feb. 15

TULSA, March 24.—Shipments of gasoline from 139 refineries in the Mid-Continent which report to the Western Petroleum Refiners Association increased 17.4 per cent during the week ending March 15. The weekly report is the third in succession issued by H. K. Davis, the association's statistician, which has shown an increase over the previous week.

For the district as a whole shipments were 21,072,634 gallons while production was 26,989,505 gallons. Total stocks increased 5,916,871 gallons to 166,572,184 gallons.

Kansas refiners increased their sales 15 per cent to 3,150,029 gallons but at the same time they increased their production 17.6 per cent to 3,838,238 gallons. Oklahoma refiners increased their production 2.69 per cent to 15,913,451 gallons and sold 10,589,066 gallons.

Texas refiner drew slightly on their stocks when they increased their shipments to 6,380,254 gallons. Their production for the week was 6,207,514 gallons. The increase in sales for Texas plants was 89.3 per cent as compared with the first week in March.

With the exception of Kansas, every group of refiners in the area increased their charges of crude and rerun oils to stills. The 61 Oklahoma plants advanced their runs 3500 barrels to 157,847 barrels per day. In Texas the 42 reporting plants ran 111,087 barrels per day, an increase of 7000 barrels and in Louisiana and Arkansas the 12 plants increased their runs 3500 barrels per day to 19,302 barrels. The 139 plants were running 326,807 barrels per day as compared with 312,756 barrels during the week ending March 8. Texas refiners continued to lead the district by charging their stills at 81 per cent of their rated capacity of 136,650 barrels per day. The entire district was running at 61 per cent of its rated capacity of 535,540 barrels per day.

Kerosene production of all plants reporting for the week was 6,801,295 gallons and shipments were 6,350,835 gallons. Stocks increased 450,460 gallons to 24,360,604 gallons.

Fuel oil stocks increased 6,380,230 gallons to 125,769,137 gallons. Oklahoma stocks increased roundly 3,000,000 gallons and Texas stocks approximately 4,000,000 gallons. Kansas stocks were cut slightly.

Summary of Report Western Petroleum Refiners Assn., Week March 15, 1924

	KANSAS	%Change over previous Week	OKLAHOMA	%Change over previous Week	TEXAS	%Change over previous Week	LA-ARK.	%Change over previous Week	TOTAL	%Change over previous Week
Plants reporting	24		61		42		12		139	
Capacity (bbls.)	83,900		268,700		136,650		46,200		535,450	
Daily Average charge to Stills Wk. 3-8	38,583		154,293		104,039		15,841		312,756	
Daily Average charge to Stills, Wk. 3-15	38,570	— 0.03	157,847	+ 2.30	111,087	+ 6.78	19,302	+21.85	326,807	+ 4.49
GASOLINE (Gallons)										
Stocks 3-8	14,282,551		91,989,098		48,460,744		5,922,920		160,655,313	
Prod. 3-8 to 3-15	3,838,238	+17.60	15,913,451	+ 2.69	6,207,514	+11.04	1,030,302	+11.43	26,989,505	+ 6.78
Sales 3-8 to 3-15	3,150,029	+15.17	10,589,066	— 1.89	6,380,254	+89.33	953,285	— 9.07	21,072,634	+17.42
Stocks 3-15	14,970,760	+ 4.82	97,313,483	+ 5.79	48,288,004	— 0.36	5,999,937	+ 1.30	166,572,184	+ 3.68
Ratio Sales to Production	82.1%		66.5%		102.8%		92.5%		78.1%	
KEROSENE (Gallons)										
Stocks 3-8	1,416,739		10,789,499		10,581,114		1,122,792		23,910,144	
Prod. 3-8 to 3-15	1,207,190	+ 9.34	3,680,713	+ 1.99	1,322,872	—30.44	590,520	+107.96	6,801,295	— 1.41
Sales 3-8 to 3-15	1,212,963	+ 7.38	3,260,916	+16.22	1,527,339	—51.96	349,617	+16.56	6,350,835	—14.35
Stocks 3-15	1,410,966	— 0.41	11,209,296	+ 3.89	10,376,647	— 1.93	1,363,695	+21.46	24,360,604	+ 1.88
Ratio Sales to Production	100.5%		88.6%		115.5%		59.2%		93.4%	
GAS AND FUEL OIL (Gallons)										
Stocks 3-8	6,882,184		52,232,961		44,390,492		15,903,270		119,388,907	
Prod. 3-8 to 3-15	4,819,012	—13.56	17,899,809	+ 4.61	15,742,615	+10.05	2,587,813	+26.23	41,049,249	+ 6.72
Sales 3-8 to 3-15	5,191,579	+32.70	15,082,168	—13.01	11,838,879	—48.26	2,556,393	+27.82	34,669,019	—24.85
Stocks 3-15	6,509,617	— 5.41	55,050,602	+ 5.39	48,274,228	+ 8.75	15,934,690	+ 0.20	125,769,137	+ 5.34
Ratio Sales to Production	107.7%		84.3%		75.2%		98.8%		84.5%	

Hackney

MIL E

Barrels and Drums that *Drain Dry*

That last drop is as valuable to your customer as the first. There is no barrel or drum on the market with openings in the heads that can be as easily and as cleanly drained as Hackney's.

The raised openings, set above the level of the chime in inverted pockets, not only prevent water from draining into the barrel when plugs are loose, not only facilitate filling and closing before shipment, but they deliver to the buyer every drop he pays for.

Only Hackney Steel Containers have these openings, and Hackney Seamless Bilged Barrels are the *only seamless barrels made.*

55 gal. and 33 gal. capacities, galvanized or black

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Please send us copies of catalog Bulletins and quote us on the following:

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Attention of ..... *Pos.* .....

Refinery Markets On Light Oil Products

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

GASOLINE AND NAPTHA

PENNSYLVANIA	Prices Mar. 24	Prices Mar. 17	Prices Mar. 10
50-52 Naptha	13 -13¼	13 -13¼	13¾-14
54 Naptha	-13½	13½-13¾	13¾-14¼
58 Gasoline	13¾-14¼	14 -14½	14 -14½
60 Straight-run gasoline	14½-15	15 -15½	15 -15½
62 Straight-run gasoline	15½-16	16 -16½	16 -16½
64 Straight-run gasoline	-17	17 -17½	17 -17½
68 Straight-run gasoline	18½-19	18½-19	19 -19½
68-70 Blend, 450 E. P.	13¾-14	13¾-14	13¾-14
60-62 Blend, 450 E. P.	13¾-14	13¾-14	13¾-14
62-64 Blend, 450 E. P.	13¾-14	13¾-14	13¾-14
66-68 Blend, 440 E. P.	14 -14½	14 -14½	14 -14½
68-70 Blend, 440 E. P.	14 -14½	14 -14½	14 -14½
68-70 Blend, 420 E. P.	14¾-15¼	14¾-15¼	14¾-15¼
OKLAHOMA			
48-50 450 E. P. naptha	10 -10½	10¼-10¾	10½-10¾
50-52 450 E. P. naptha	10¼-10¾	10½-10¾	10½-11
56-58 450 E. P. gasoline	10¼-10¾	10½-10¾	10½-10¾
58-60 (New Navy) 437E.P.131 i.b.p.	10½-10¾	10¾-11	10¾-11
60-62 400 E. P. gasoline	11¾-12¼	11¾-12	11¾-12
64-66 375 E. P. gasoline	13 -13½	13 -13½	12¾-13¼
68-70 350 E. P. gasoline	13½-13¾	13¼-13¾	13½-13¾
NORTH TEXAS			
48-52 450 E. P. naptha	10 -10½	10 -10½	10½-10¾
56-58 450 E. P. gasoline	10¼-10¾	10½-10¾	10½-10¾
58-60 450 E. P. gasoline	10½-10¾	10½-10¾	10½-11
58-60 New Navy gasoline	10¾-11	10¾-11	10¾-11
60-62 400 E. P. gasoline	12 -12½	11¾-12	11¾-12
64-66 390 E. P. gasoline	13 -13½	12¾-13	12½-13
64-66 375 E. P. gasoline	13½-13¾	13 -13½	12¾-13¼
68-70 350 E. P. gasoline	13¾-14¼	13¾-14	
NORTH LOUISIANA			
58-60 450 E. P. gasoline	10½-10¾	10½-10¾	10½-10¾
58-60 437 Navy Gasoline	10¾-11¼	10¾-11	10¾-11
64-66 390-400 E. P. gasoline	13½-13¾	13½-14	13 -13½
ARKANSAS			
58-60 450 E. P. gasoline	11 -11¼	10¾-11	10¾-11
58-60 Navy gasoline	11¼-11½	11 -11¼	11 -11¼
64-66 375 E. P. gasoline	13½-13¾	13½-13¾	13 -13¼

NATURAL GASOLINE

OKLAHOMA			
Grade A, 72-78 375 E.P.,90% Rec..	9¾-10	10 -10¼	10¼-10½
Grade B, 76-82 375 E.P.,85% Rec..	8¾- 9	9 - 9¼	9 - 9½
Grade C, 80-88 350 E.P.,78% Rec..	7¾- 8¼	8 - 8½	8¼- 8½
Grade D, 88-92 350 E.P.	7¾- 8¼	8 - 8½	8¼- 8½

(Motor Natural Gasoline—Blends)

OKLAHOMA	Prices Mar. 24	Prices Mar. 17	Prices Mar. 10
Grade 1, 58-62 437 E.P.,91% Rec...	9¾-10¼	9¾-10	10 -10¼
Grade 2, 58-62 450 E.P.,90% Rec...	9¾-10¼	9¾-10	10 -10¼
Grade 3, 66-64 440 E.P.,88% Rec...	9¾-10¼	9¾-10	10 -10¼
Grade 4, 66-70 435 E.P.,85% Rec...	9¾-10¼	9¾-10	10 -10¼
NORTH TEXAS			
Grade A ,72-78 90% Rec.*.....	9¼-10	9¼-10¼	10 -10¼
Grade B, 76-82 85% rec.*.....	8¾- 9	8¾- 9¼	9 - 9½
Grade C, 80-88 78% rec.....	7¾- 8¼	8 - 8¼	8¼- 8½

*F. O. B. Breckinridge

(Motor Natural Gasoline—Blends)

Grade 1, 58-62 437 E. P.....	10 -10¼	10 -10¼	10¼-10½
Grade 2, 58-62 450 E. P.....	10 -10¼	10 -10¼	10¼-10½

BURNING OILS

PENNSYLVANIA			
45 Water White	7 - 7¼	7¼- 7½	7½- 7¾
46 Water White	7½- 7¾	7¾- 8	8 - 8¼
47 Water White	8¼- 8½	8¼- 8½	8½- 8¾
300 Burning Oil	8 - 8¼	8 - 8¼	8 - 8¼
OKLAHOMA			
40-42 Prime White Dist.	4 - 4¼	4 - 4¼	4 - 4¼
41-43 Water White	4¼- 4½	4½- 4¾	4¾- 4¾
42-44 Water White	4½- 4¾	4¾- 5	4¾- 5¼
NORTH TEXAS			
40-42 Prime White Distillate	4¼- 4½	4 - 4¼	4¼- 4½
41-43 Water White Kerosene	4½- 4¾	4¾- 5¼	5 - 5¼
NORTH LOUISIANA			
41-43 Water White Kerosene	5 - 5¼	5 - 5¼	5¼- 5½
ARKANSAS			
41-43 Water White Kerosene	5 - 5¼	5 - 5¼	5 - 5¼
42-44 Water White Kerosene	5¼- 5½	5¼- 5½	5¼- 5½

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

Export Holds Up Gasoline Price On Dead Domestic Market

CHICAGO, March 22.—The rain and snow which fell in the eastern half of the United States on Thursday, and snow in all of Standard Oil Co. of Indiana territory, were sufficient to ruin a good winter gasoline market. But the market was poor any way, so the weather served only to postpone the beginning of the motoring season. Coming when it did, with the ground already saturated with water, its damage is not so great as it might have been later.

A little gasoline has been sold through Chicago this week, most of it moving into the northern part of Wisconsin and Minnesota. It appears that the winter which has been unusually wet in the lake states has brought only light snows to the more northerly region and the frozen ground permits of travel there. However, the discomfort of motoring in the severe weather experienced there this year holds gasoline consumption down. One Minnesota jobber reported that his books showed last month to be the best February of history.

Carson Petroleum Co. is still buying gasoline for export, not insisting upon large offerings of Navy but accepting some at 10½ cents. This situation naturally holds the price of domestic spot goods above 10½ and the prevailing figure is 10¾ but the quotation is having little to do with the movement. Probably almost as much could be sold at 11 cents as at 10, with 90 per cent of the jobbers in the middle west loaded up on gasoline and begging their refiners to hold off shipments on marginal con-

Everything else in the oil line is much as it has been for two weeks. Kerosene has fallen off in demand. All the jobbers who had any place to put a car of refined oil two weeks ago since have been able to fill such vacant storage at 4½ cents. When the kerosene market does start it will start with a jump, jobbers believe. Out in the small towns of this territory jobbers have lists of their rural customers who are anxious for kerosene. Farmers usually are able to keep their immediate needs supplied by purchasing in small quantities but they have large storage empty. And it will stay empty until the roads will sustain the weight of a tank wagon, which may be two or three weeks.

Household fuel business is falling off steadily. Some small orders have been placed at 4 cents over the past week but 3¾ is the ruling quotation. Nevertheless, distillate jobbers believe the domestic fuel market will be fairly uniform until time to lay off top coats.

Although gas oil is a good ½ cent cheaper than distillate, it is still out of line with the fuel oil market. The generally accepted gas oil price is 3¼ cents a gallon which is upwards of $1.35 a barrel. At that figure the market is weak but has not fallen in proportion to fuel. It seems apparent that refiners are indisposed to sell their gas oil as fuel when it may have a record value as material to crack.

Fuel is a drag on the market at $1.05 although some refiners insist they must have $1.10 for their goods. Industries are not now booming and coal is cheap, which accounts for the market's weakness. Smackover crude fuel is only a nickel under refinery fuel at 24-26 gravity just now. Since the big pipe lines started taking $1 Smackover crude south from the field to refine, it has become scarcer in the Chicago market. Little or none can be had in Chicago under 95 cents and sales are being made at $1.

Any truck owner will tell you about Kelly Kats

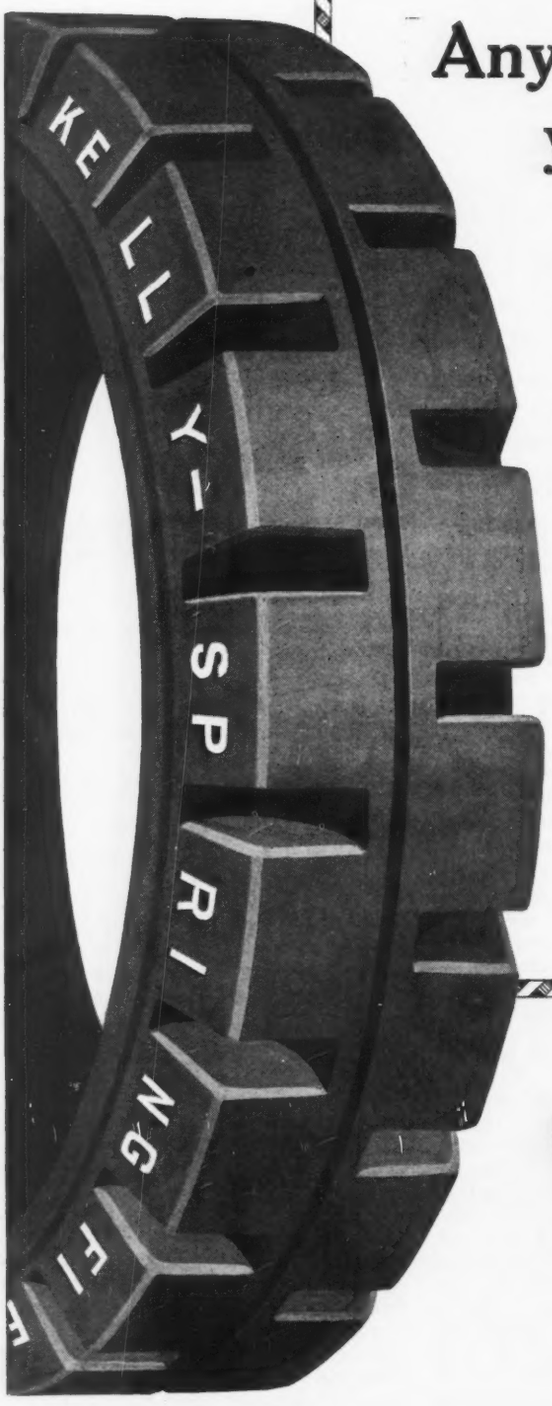
Kelly Kats are the most widely used truck tires on the market. You see them on trucks of every size and type in practically every line of business. They have attained this popularity by delivering exceptional service at very low cost.

Kelly Kats give traction without chains on almost any kind or condition of road. They cushion the truck and protect its delicate mechanism from road shock. They stand a tremendous amount of punishment. And they deliver such exceptional mileage that their cost, in the long run, is extremely low.

This combination of qualities offered by Kelly Kats seldom fails to win the hearty endorsement of every truck owner who gives them a trial. If you would like to know more about Kelly Kats, ask any truck owner who uses them. We will be content to leave the case in his hands.

There are no Caterpillar tires but Kelly Kats

KELLY-SPRINGFIELD TIRE COMPANY
250 West 57th Street New York, N. Y.



Refinery Markets On Lubricants, Heavy Oils

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

NEUTRAL OILS

PENNSYLVANIA	Prices Mar. 24	Prices Mar. 17	Prices Mar. 11
(Viscous Test 70)			
220 Vis. No. 3 Asso. Filt.	-35	-35¼	35¼-36
200 Vis. No. 3 Assoc. Filt.	32 -33	32½-33	33 -33½
180 Vis. No. 3 Assoc. Filt.	30½-31	30½-31	31 -31½
150 Vis. No. 3 Asso. Filt.	28½-29	28½-29	28½-29½
(Non-Viscous)			
84 350-360 Flash	9 - 9½	9 - 9½	9 - 9½
36 Miners Neutrals 300-305 Flash	8 - 8½	8 - 8½	8 - 8½
OKLAHOMA			
(Viscous Test 100)			
70 Vis. at 100°F. No. 2½-3 color	4¾- 5	4¾- 5	4¾- 5
100 Vis. at 100°F. No. 2 color	6 - 6½	6 - 6½	6 - 6½
100 Vis. at 100°F. No. 2½-3 color	5¾- 6	5¾- 6	5¾- 6
150 Vis. at 100°F. No. 3 color	12½-13	12½-13	12½-13
150 Vis. at 100°F. No. 4 color	12 -12½	12 -12½	12 -12½
180 Vis. at 100°F. No. 3 color	15 -15½	15 -15½	15 -15½
180 Vis. at 100°F. No. 4 color	14¼-14¾	14¼-14¾	14¼-14¾
180 Vis. at 100°F. No. 5 color	13½-14	13½-14	13½-14
180 Vis. at 100°F. No. 6 color	12¾-13¼	12¾-13¼	12¾-13¼
200 Vis. at 100°F. No. 3 color	16 -16½	16 -16½	16 -16½
200 Vis. at 100°F. No. 4 color	15¼-15¾	15¼-15¾	15¼-15¾
200 Vis. at 100°F. No. 5 color	14½-15	14½-15	14½-15
200 Vis. at 100°F. No. 6 color	13¾-14¼	13¾-14¼	13¾-14¼
220 Vis. at 100°F. No. 3 color	17 -17½	17 -17½	17 -17½
220 Vis. at 100°F. No. 4 color	16¼-16¾	16¼-16¾	16¼-16¾
220 Vis. at 100°F. No. 5 color	15½-16	15½-16	15½-16
220 Vis. at 100°F. No. 6 color	14¾-15¼	14¾-15¼	14¾-15¼
240 Vis. at 100°F. No. 3 color	18 -18½	18 -18½	18 -18½
240 Vis. at 100°F. No. 4 color	17 -17¾	17 -17¾	17 -17¾
240 Vis. at 100°F. No. 5 color	16½-17	16½-17	16½-17
240 Vis. at 100°F. No. 6 color	15¾-16¼	15¾-16¼	15¾-16¼
280 Vis. at 100°F. No. 3 color	20½-21	20½-21	20½-21
280 Vis. at 100°F. No. 4 color	19½-20	19½-20	19½-20
280 Vis. at 100°F. No. 5 color	18½-19	18½-19	18½-19
280 Vis. at 100°F. No. 6 color	17½-18	17½-18	17½-18
300 Vis. at 100°F. No. 6 color	20 -20½	20 -20½	20 -20½
SOUTH TEXAS			
(Viscous Test 100; cold test 0)			
100 Vis. No. 2 Color Unfilt. Pale	9½-10½	9 -10	9 -10
150 Vis. No. 2½ Color Unfilt. Pale	11½-12	11 -11½	11 -11½
200 Vis. No. 3 Color Unfilt. Pale	14 -14	13½-14½	13½-14½
300 Vis. No. 3 Color Unfilt. Pale	16½-17½	16 -17	16 -17
500 Vis. No. 3½ Color Unfilt. Pale	18 -19	17½-18½	17½-18½
750 Vis. No. 4 Color Unfilt. Pale	24½-25½	24 -25	24 -25
200 Vis. No. 2 Filt. Pale	-24½	-24½	-24½
300 Vis. No. 2 Color Filt. Pale	-27½	-27½	-27½
500 Vis. No. 2½ Color Filt. Pale	-30½	-30½	-30½
750 Vis. No. 2½ Color Filt. Pale	-40½	-40½	-40½
200 Vis. No. 5½ Color Red Oil	12 -13	11½-12½	11½-12½
300 Vis. No. 5½ Color Red Oil	14½-15½	14 -15	14 -15
500 Vis. No. 6 Color Red Oil	16½-17½	16 -17	16 -17
750 Vis. No. 6 Color Red Oil	23 -24	22½-23½	22½-23½

CYLINDER OILS

PENNSYLVANIA	Prices Mar. 24	Prices Mar. 17	Prices Mar. 11
600 Steam Refined	22 -22½	-22	-21
635 Steam Refined	-25	24 -24½	23½-24
650 Steam Refined	26½-27	25½-26	25 -25½
600 Flash	29 -29½	28½-29	28 -28½
600 Warren E	25½-26	25½-26	25½-26
600 Oil City E	-24	-24	-24
600 Filtered D	30 -30½	-30	-30
Cold Test Stocks (bright filtered)	38 -39	38 -39	38 -39
Cold Test Stock (dark filtered)	34 -36	35 -36	36 -37
Black Oil	- 8	8 - 8½	- 8
OKLAHOMA			
Bright Filtered Stock	29 -34	29 -34	29 -34
Medium Filtered Stock	19 -20	19 -19½	19 -19½
600 Steam Refined Olive Green	9½-10	9¼-10	9¼- 9½
600 Steam Refined Dark Green	8½- 9	8¼- 8½	8 - 8¼
Black Oil	4¼- 4½	4¼- 4½	4¼- 4½

WAX

PENNSYLVANIA			
(Per Pound New York)			
122-124 White Crude Scale	5 - 5¼	4⅞- 5	4⅝- 4¾
124-126 White Crude Scale	- 5¼	5 - 5⅛	4¾- 5
OKLAHOMA			
(Per Pound Group 3)			
124-126 White Crude Scale	4¾- 4⅞	4½- 4¾	4¾- 4½

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil	5¾- 6	- 6	6 - 6¼
30-34 Fuel Oil	5¼- 5½	- 5½	5½- 5¾
OKLAHOMA			
38-40 Straw Distillate	3½- 3¾	3½- 3¾	3½- 3¾
36-38 Straw Distillate	3¾- 3¾	3¾- 3¼	3¾- 3½
32-36 Gas Oil (Gal.)	3⅛- 3¼	3¼- 3¾	3¼- 3¾
24-26 Fuel Oil (bbl.)	1.05-1.10	1.15-1.20	1.07½-1.15
Fuel Oil, buyers, cars (bbl.)	1.00-1.05	1.00-1.05	1.05-1.10
40-50 Asphalt Content Road Oil	1.20-1.30	1.25-1.30	1.25-1.35
50-60 Asphalt Content Road Oil	1.30-1.40	1.30-1.40	1.30-1.40
60-70 Asphalt Content Road Oil	1.35-1.45	1.35-1.45	1.40-1.50
NORTH TEXAS			
38-40 Straw Distillate	3½- 4	3¾- 4	3¾- 4
32-36 Gas Oil (gal.)	3¼- 3½	3¼- 3½	3¼- 3½
24-26 Fuel, per bbl	1.10-1.20	1.10-1.20	1.20-1.30
South Texas Fuel	1.90-2.00	1.75-1.90	1.75-1.90
South Texas Gas Oil	5 - 5¼	4¾- 5	4¾- 5
NORTH LOUISIANA			
32-36 Gas Oil (Gal.)	3¼- 3¾	3½- 3¾	3½- 3¾
22-26 Fuel Oil (bbl.)	1.00-1.05	1.00-1.05	1.00-1.10
ARKANSAS			
38-40 Distillate	3½- 3¾	3½- 3¾	3½- 3¾
32-36 Gas Oil	3¼- 3½	3¼- 3½	3¼- 3½
22-26 Refinery Fuel Oil	1.00-1.05	1.00-1.05	1.00-1.10
Smackover Crude Fuel	.95-1.00	.95-1.00	- .95
East Field Crude Fuel	-1.00	-1.00	-1.00

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

Demand Strong And Prices Higher For Pennsylvania Stocks

CLEVELAND, March 24.—Demand for Pennsylvania steam refined stocks continues strong and prices are fractionally higher than a week ago. Filtered stocks have not maintained their relative position with steam refined goods but demand for these is expected to improve soon and then prices probably will adjust themselves automatically.

Gasoline and kerosene have softened because of a dull market. Outside the cities there is little chance for motoring in the territory which forms the largest outlet for Pennsylvania gasoline. The blanket of snow was added to last week and drifts are still of considerable size on many roads. Dirt roads were still frozen and it will take some time after the weather moderates to dry them sufficiently for extensive motoring.

Supplies of gasoline have backed up at a number of refineries while runs were maintained in order to meet cylinder stocks demand. Some distress motor fuel has been thrown on the market and prices have been forced down. Several refiners who still are able to store gasoline, have been holding firmly around 14 to 14½ cents for 58-60, but a considerable quantity is now available at 13¾ cents.

Kerosene prices with the exception of those for 47 gravity have been scaled down ¼ cent a gallon. There is yet no demand for tractor fuel and it is not expected the market will strengthen before spring plowing begins.

Demand for viscous neutrals is steady and prices are holding up. Paraffin wax is active, strong and scarce. While some orders are being placed at 5 cents, leading refiners are getting 5⅛ and 5¼ cents. Fuel oil is easy and some price concessions have been made by plants not storing it for cracking purposes.

Kentucky

In central Kentucky an improvement was noted today in inquiries for fuel oil. The movement, however, has not been large, but the inquiries are expected to bring increased business. Kerosene movement has been steady and gas oil fairly good. Gasoline continues quiet. Central Kentucky prices are: 58-60 gasoline 14½ cents; 60-62, 15½; 64-66, 16, and 68-70, 16. Kerosene 7; gas oil 5¼-5½, and fuel oil 4⅜-5.

At Louisville, these prices are quoted: New Navy, 14; kerosene, 7¼; gas oil 6, and fuel oil 4¾.

Pennsylvania Stocks Are Leaders In New York Export Market

By Special Correspondent

NEW YORK, March 24

EXPORT demand for the major petroleum products was not so good here last week as during the preceding week, and much of the foreign demand was confined to the lubricating oils. Demand for Pennsylvania cylinder stocks has picked up considerably in the past few weeks, and a good volume of business was done last week. However, in most cases buyers were content with from 500 to 1000 barrels, and no cargo sales were located. For Pennsylvania 600 s. r. in barrels New York some of the large refiners are asking as high as 34 cents a gallon, but business could have been done at 31 cents in several directions. Western 600 s. r. was in better demand at prices ranging from 20 to 22 cents a gallon, same basis. Bright stocks are in good demand. French buyers were credited with a large percentage of the buying while English buyers were also fairly active.

The demand for gasoline was less active here than during the previous week, and no confirmed bulk sales were heard of. Navy is quoted at 13½ cents and 64 at 15¾ to 16 cents at the Gulf. There were three inquiries for cargo lots but buyers' ideas are considerably below those of refiners. Stocks abroad are by no means large but many of the big marketing concerns on the Continent and in England have already contracted for their spring supplies.

Cased Gasoline Dull

Cased gasoline was dull and it is rumored that local prices can be shaded in some directions. However, the majority of large refiners expect a general advance in crude oil prices and are not anxious to press sales at concessions.

In single tank cars delivered to the local trade, new Navy is held at 15½ cents but on a round lot 15 cents could have been done. Jobbers have been buying more sparingly of late owing to the unfavorable weather conditions.

Kerosene was disappointing and many, although not all, large refiners are willing to make concessions in order to stimulate the movement. At the Gulf prime white was offered at 6⅛ cents and water white at 6½ cents. No bulk sales were recorded although several cargo inquiries were received from England, Scandinavia and France. Buyers are entertaining ideas, about ½ cent below those of refiners. Some of the big refiners say they will hold their stocks until next fall, feeling that there will be something of a scarcity by then as it is expected that considerable kerosene will be cracked for gasoline during the summer months. The price of water white in single tank cars delivered to the trade was easier at 8¼ cents a gallon, but jobbers purchased sparingly throughout the week. Inquiries for cased kerosene have been a trifle more numerous but nothing worth while developed in this direction.

Bunker Oil Demand Light

Demand for bunker oil for export was rather light, and only one cargo sale was reported, which will be shipped to the continent during April, from a Gulf port. The price was not made public. Owing to the firmness in Mexican crude oil, bunker oil is firm, and considerable business was done at the Gulf at prices ranging from $1.55 to $1.60 per barrel. Locally the quotation was firm at $1.60 per barrel at the refinery. Some observers look for $1.75 oil soon, but others declare that the weakness in bunker coal will keep the price down where it is.

New York Market

The following prices are quoted by eastern seaboard independent refineries on products which are manufactured from Mexican and California crude transported from Tampico to the refinery by tanker and from California crude.

	Mar. 24
*Gasoline (New Navy) gal., Tank Cars	.15¼
‡Bunker oil (F.O.B. New York) bbl.	1.60
Diesel Oil F.O.B. Refinery bbl.	2.10
Gas Oil (36-40 refinery) gal.	.05¾
†Kerosene, 45-150 W.W. Bulk Del., N.Y. nom.	.08¼

*Delivered.
†Nominal.
‡Plus. 06¼ charge lighterage.

Export Markets

Furnished by big exporting oil companies. No actual sales. Record for statistical purposes only.

Illuminating Oils

	Mar. 24	Mar. 17
Bulk, gal., Bayonne	7.00	7.00
Barrels, gal., Bayonne, cargo	14.00	14.00
Cases, gal., Bayonne	17.40	17.40

Prices for water white oil (150 test) are 1 cent higher than those for standard white.

Gasoline-Naptha (Cents per Gallon)

U. S. Navy, dead bulk	14.25	14.25
U. S. Navy, cases	28.40	28.40
Export Naphtha bulk	16.00	16.00
63-66 deg. bulk	18.00	18.00
66-68 deg. bulk	19.50	19.50

Tide Water Oil Company (f. o. b. Bayonne)

58-59 deg. bulk	14.75	14.75
58-59 deg. cases	28.40	28.40
Export grade, Navy Specifications bulk	14.25	14.25
63-65 deg. bulk	18.00	18.00
68-72 deg. bulk	20.50	20.50

	Bulk	Barrels	Cases
Standard white 110	7.00	13.75	17.40
Water white 150	8.00	14.75	18.40

The Texas Company

Gasoline, cases		28.40	28.40
Kerosene	**Bulk**	**Barrels**	**Cases**
Standard White	7.00	14.00	17.40
Prime White	7.50	14.50	17.90
Water White	8.00	15.00	18.40

Diesel oil is in better demand, but buying was not brisk by any means. Spot busines was fair, and comparatively little contracting was heard of. Refiners are asking $2.10 per barrel at the refinery.

There was a slightly better demand for gas oil for domestic consumption but export buying was anything but active. At the Gulf 26-28 was held at 4½ to 4¾ cents a gallon, and there was some talk of pending advances owing to the recent upturn in Gulf Coastal crude oil. Export inquiries were numerous enough but prices bid were below refiners' ideas. For 36-40 at local refineries, the price was unchanged but easy at 5½ cents a gallon.

Waxes Are More Active

The waxes were in better demand. White crude scale 122-124 A. m. p. was held at 5¼ cents a pound, and some export business was put through in small lots. Refined waxes are holding up well, but no changes in prices were noted. Match waxes are moving into European consuming channels in a larger way. The request for yellow was light and routine.

Petrolatums enjoyed a steady demand, both for domestic and foreign account. Snow white was held at 13 to 13¼ cents a pound, European manufacturers of medicinal and facial cream preparations are credited with a good deal of the buying. The medicinal oils were quiet at unchanged prices.

British Importations

During the week ended March 3 there there were imported into the United Kingdom 25,409,938 gallons of petroleum. Larger receipts at London included the following amounts of benzine to the Shell Marketing Co., 2,333,332 gallons from San Pedro, 2,333,586 gallons from Rangoon, 2,096,962 gallons from Abadan and 1,830,185 gallons from Singapore. The Anglo-American Oil Co. received 711,895 gallons of lubricating oil from Richmond, Calif.

At Liverpool, the Lubricating & Fuel Oils, Ltd., received 402,240 gallons of lubricating oil from Marcus Hook. The Anglo Mexican Petroleum Co. received 472,000 gallons of fuel oil from Tampico. At Barrow the same concern received 1,434,687 gallons of gasoline from Tampico while the Shell received 329,535 gallons of gasoline from Curacao.

At Hull, Anglo American received 747,920 gallons of gas oil from Philadelphia. At Manchester the Anglo American received 1,100,550 gallons of gas oil from Baton Rouge and the Lubricating & Fuel Oils received 720,000 gallons of lubricating oil from Philadelphia. At Southampton the Anglo Mexican received 1,754,420 gallons of fuel oil from Tampico and Anglo American received 747,920 gallons of gas oil from Philadelphia.

At Swansea the National Oil Refineries received 5,031,190 gallons of crude from Abadan. At Grangemouth Scottish Oils received 1,804,000 gallons of crude oil from Abadan.

Tank Wagon, Service Station Markets
Gasoline and Kerosene

BELOW are given in cents a gallon, the tank wagon price of gasoline without the special taxes levied against motor fuels by many states, the amount of the state taxes, the total tank wagon price. with tax added in and the service station or retail price of gasoline as quoted in the various Standard Oil marketing territories. The right hand column is the tank wagon price of kerosene. By thnk wagon price is meant the price to re-sale agents or dealers. Usually this price does not apply to sales to consumers from tank wagons.

Prices in effect March 24

S. O. NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total	S.S.	Oil T.W.
Atlantic City, N. J.	19.5	0	19.5	*	14
Newark, N. J.	19.5	0	19.5	*	14
Annapolis, Md.	19	2	21	*	13.5
Baltimore, Md.	19	2	21	24	13.5
Cumberland, Md.	19	2	21	24	13.5
Washington, D.C.	19	0	19	21	13.5
Danville, Va.	19	3	22	*	14.5
Norfolk, Va.	19	3	22	24	14
Richmond, Va.	19	3	22	25	14.5
Roanoke, Va.	19	3	22	24	14.5
Petersburg, Va.	19	3	22	*	14.5
Charleston, W. Va.	19	2	21	24	14.5
Clarksburg, W. Va.	19	2	21	*	14.5
Keyser, W. Va.	19	2	21	*	14.5
Parkersburg, W. Va.	19	2	21	*	13
Wheeling, W. Va.	19	2	21	24	14.5
Williamson, W. Va.	19	2	21	*	14.5
Charlotte, N. C.	19	3	22	25	14.5
Hickory, N. C.	19	3	22	*	14.5
High Point, N. C.	19	3	22	*	14.5
Mt. Airy, N. C.	19	3	22	*	14.5
Salisbury, N. C.	19	3	22	*	14.5
Charleston, S. C.	19	3	22	25	13.5
Columbia, S. C.	19	3	22	24	14.5

*Dealers set own prices. S. O. New Jersey does not operate station.

S. O. NEW YORK TERRITORY

*New York City	20	0	20	22.5	15
Albany, N. Y.	20	0	20	22.5	14
Buffalo, N. Y.	18.5	0	18.5	21.5	15
Rochester, N. Y.	19.5	0	19.5	24	13.5
Syracuse, N. Y.	19.5	0	19.5	22	12
Boston, Mass.	20	0	20	23	13
Augusta, Me.	19	1	20	23.5	15
Manchester, N. H.	19	1	20	23.5	15
Burlington, Vt.	19	1	20	23.5	15

*In steel barrels.

ATLANTIC REFINING TERRITORY

Pittsburgh, Pa.	20	0	20	25*	14
Philadelphia, Pa.	20	0	20	25*	14
Allentown, Pa.	20	0	20	25*	14
Scranton, Pa.	20	0	20	25*	14
Altoona, Pa.	20	0	20	25*	14
Dover, Del.	20	2	22	25	14
Wilmington, Del.	20	2	22	25	14
Providence, R. I.	20	0	20	23	14
Springfield, Mass.	20	0	20	23	14
Worcester, Mass.	20	0	20	23	14
Hartford, Conn.	20	1	21	24	14
New Haven, Conn.	20	1	21	24	14
Boston, Mass.	20	0	20	23	14

*Contains 2-cent tax collected by dealer and paid by him directly to state.

S. O. OHIO TERRITORY

All Ohio points	20	0	20	22	15

S. O. KENTUCKY TERRITORY

Lexington, Ky.	20	1	21	23	15
Louisville, Ky.	19	1	20	22	14
Covington, Ky.	20	1	21	23	15
Clarksdale, Miss.	19	1	20	22	14
Jackson, Miss.	19	1	20	22	12
Natchez, Miss.	18.5	1	19.5	21.5	13.5
Vicksburg, Miss.	18.5	1	19.5	21.5	13.5
Birmingham, Ala.	20	2	22	24	15.5
Mobile, Ala.	19	2	21	23	13.5
Montgomery, Ala.*	21		23	25	16.5
Atlanta, Ga.	19	3	22	26	14
Augusta, Ga.	21	3	24	26	14.5
Macon, Ga.	21	3	24	26	15.5
Savannah, Ga.	19	3	22	24	14
Jacksonville, Fla.	19	3	22	24	14
Miami, Fla.	21	3	24	26	15.5
Tampa, Fla.	19	3	22	24	14
Pensacola, Fla.	19	3	22	24	14.5

*Local privilege Tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

S. O. CALIFORNIA TERRITORY

Phoenix, Ariz.	20	3	23	26	21.5
Los Angeles, Cal.	14	2	16	19	15.5
Fresno, Cal.	15.5	2	17.5	20.5	17.5
San Francisco, Cal.	15	2	17	20	15.5
Reno, Nev.	18.5	2	20.5	23.5	19
Portland, Ore.	16	3	19	22	16.5
Seattle, Wash.	16	2	18	21	16.5
Spokane, Wash.	20	2	22	25	20.5
Tacoma, Wash.	16	2	18	21	16.5

S. O. LOUISIANA TERRITORY

	Gasoline T.W.	Tax	Total	S.S.	Oil T.W.
Camden, Ark.	17	4	21	23	13
Little Rock, Ark.	17	4	21	23	13
West Helena, Ark.	17	4	21	23	13
Alexandria, La.	17.5	1	18.5	21.5	13
Baton Rouge, La.	16	1	17	20	11.5
Lake Charles, La.	17.5	1	18.5	21.5	13
New Orleans, La.	16.5	1	17.5	20.5	9
Shreveport, La.	17.5	1	18.5	21.5	13
Bristol, Tenn.	20	2	22	24	15.5
Chattanooga, Tenn.	18.5	2	20.5	22.5	14.5
Knoxville, Tenn.	19.5	2	21.5	25.5	15
Nashville, Tenn.	17.5	2	19.5	20.5	13.5
Memphis, Tenn.	18	2	20	22	14

MAGNOLIA PETROLEUM TERRITORY

Muskogee, Okla.	18	2½	20.5	23.5	13
Oklahoma City	17	2½	19.5	23.5	13
Tulsa, Okla.	18	2½	20.5	23.5	11
Fort Smith, Ark.	15	4	19	24	13
Little Rock, Ark.	18	4	22	25	13
Texarkana, Ark.	17	4	21	24	13
Dallas, Tex.	17	1	18	21	10
El Paso, Tex.	17	1	18	22	13
Fort Worth, Tex.	17	1	18	21	11
Houston, Tex.	16	1	17	21	12
San Antonio, Tex.	14	1	15	18	10

S. O. INDIANA TERRITORY

Chicago, Ill†	18	0	18	20	12
Decatur, Ill.	18.2	0	18.2	20.2	12.5
East St. Louis, Ill.	17.1	0	17.1	19.35	11.6
Joliet, Ill.	18.4	0	18.4	20.4	12.7
Peoria, Ill.	18.2	0	18.2	20.2	12.5
Quincy, Ill.	18.2	0	18.2	20.2	12.3
Evansville, Ind.	18	2	20	22	12.5
Indianapolis, Ind.	18.2	2	20.2	22.2	12.7
South Bend, Ind.	18.4	2	20.4	22.4	12.9
Detroit, Mich.	18.8	0	18.8	20.8	13.2
Grand Rapids, Mich.	18.7	0	18.7	20.7	13.1
Saginaw, Mich.	18.9	0	18.9	20.9	13.3
La Crosse, Wis.	19.2	0	19.2	21.2	13.4
Madison, Wis.	18.3	0	18.3	20.3	12.5
Milwaukee, Wis.	18.1	0	18.1	20.1	12.2
Duluth, Minn.	19.2	0	19.2	21.2	13.6
Mankato, Minn.	18.8	0	18.8	20.8	13.4
Minneapolis, Minn.	18.9	0	18.9	20.9	13.6
Davenport, Ia.	18.5	0	18.5	20.5	12.9
Des Moines, Ia.	18.5	0	18.5	20.5	12.9
Sioux City, Ia.	18.1	0	18.1	20.1	12.5
Kansas City, Mo.*	17.9	1	18.9	20.9	11.3
St. Joseph, Mo.*	17.8	½	18.3	20.3	12.2
St. Louis, Mo*	17.1	½	17.6	19.9	12
Fargo, N. D.	19.6	1	20.6	22.6	15.6
Grand Forks, N.D.	20.2	1	22.2	24.2	15.9
Minot, N. D.	20.9	1	21.9	23.9	15.6
Huron, S. D.	20	2	22	24	14.1
Pierre, S. D.	20	2	22	24	14.1
Wichita, Kan.	17.8	0	17.8	19.8	11.8
Bartlesville, Okla.	16.9	1	17.9	19.9	10.9

*Taxes levied by cities.

†Base tank wagon price; large dumps on sliding scale, see schedule in column to right.

S. O. NEBRASKA TERRITORY

Crawford, Neb.	19	0	19	*	13.25
Omaha, Neb.	18.25	0	18.25	20.25	12.5
McCook	19.75	0	19.75	21.75	14
Norfolk	18.75	0	18.75	20.75	13
North Platte	19.75	0	19.75	21.75	13.75
Scotts Bluff	19.25	0	19.25	21.25	13.25

*Standard has no service station here.

CONTINENTAL OIL TERRITORY

Denver, Colo.	19	2	21	23	14.5
Glenwood Sp'gs. Colo.	23	2	25	*	18.5
Pueblo, Colo.	19	2	21	23	14.5
Basin, Wyo.	21	1	22	*	15
Casper, Wyo.	19	1	20	22	13
Cheyenne, Wyo.	20.5	1	21.5	23.5	15
Cody, Wyo.	22	1	23	*	16
Lander, Wyo.	21	1	22	*	15
Sheridan, Wyo.	23	1	24	26	17
Billings, Mont.	21.5	2	23.5	25.5	16.5
Butte, Mont.	23	2	25	27	17
Great Falls, Mont.	23	2	25	27	18
Helena, Mont.	23	2	25	27	18
Miles City, Mont.	22.5	2	24.5	26.5	17.5
Ogden, Utah	21.5	2½	24	26	17.5
Salt Lake City, Utah	21.5	2½	24	26	17.5
Boise, Ida.	22.5	2	24.5	26.5	20
Albuquerque, N. M.	23	1	24	26	17.5

*Continental has no service stations at these points.

Week's Price Changes Tank Wagon Market

DALLAS, March 24.—Magnolia Petroleum Co. on March 17 advanced tank wagon and service station price of gasoline at El Paso 2 cents, to 18 and 22 respectively. On March 19 it reduced tank wagon 3 cents, service station 1 cent at Fort Smith, to 19 and 24 cents respectively.

Raise Prices Of Texas Reds And Unfiltered

HOUSTON, March 22.—Unfiltered pale and red oils were advanced ½ cent a gallon in the south Texas market after the Humble Oil & Refining Co's. 15-cent advance in price of Gulf Coastal grade A crude March 20. Filtered grades of lubricants were not advanced because they had been relatively higher than unfiltered and red oils.

The advance in grade B oil was 10 cents bringing the prices to $1.80 for grade A and $1.50 for grade B. The advances were met by all purchasing companies. Grade A production now averages 50,000 barrels daily and demand for lubricant manufacture has caused some companies to draw on stored stocks.

Grade B oil is of high gas oil content and does not conform in its lower lubricant percentages to zero cold specifications. Hence it is utilized mainly for cracking and fuel.

Royal Dutch To Sell More Common Stock

NEW YORK, March 24.—The Royal Dutch Co. directors have decided to offer subscription rights to 25 per cent additional ordinary shares to be taken at the time the final dividend for the year is paid in June. The cablegram to the Equitable Trust Co. New York, announcing the decision of the directors follows:

"Today's meeting board Royal Dutch decided emit in June new ordinary shares at par in proportion of one new share against four old ones. Payment to be made on day of payment of final dividend. From this decision no conclusion may be drawn as regards final dividend over 1923 about which, as a matter of course, nothing can be said yet."

Royal Dutch has outstanding 321.457 ordinary shares of 1000 florin par value, equivalent to $402 a share. The par value of the New York shares traded on the New York Stock Exchange is 33⅓ florins or $13.40.

Chicago Tank Wagon Scale

Following is the schedule of gasoline tank wagon prices of Standard Oil Co. of Indiana for deliveries in Chicago and suburbs of Chicago in Illinois.

Size of Dump	Price
1 to 99 gallons	18c
100 to 249 gallons	16
250 to 499 gallons	15.50
500 gallons or more	15.25

Export Buyers Active In North Texas

WICHITA FALLS, March 22.—Export buying of 64-66, 375 end point gasoline, has been the only important activity in north Texas refinery markets during the past week. A number of fairly large orders for this class of goods have been placed during the last few days at around 13½ cents per gallon.

The export gasoline just bought may be delivered by refiners at any time prior to April 10. Generally speaking most of the refiners making 64 are well supplied with orders for the next two weeks.

A rumor was circulated somewhat generally through the Mid-Continent late this week that three refineries at Wichita Falls had a surplus of gasoline loaded in cars on the tracks for which no shipping instructions were available. It was reported that railroads had issued an embargo forbidding any further shipment of empties to the three plants until the congestion could be eliminated.

An investigation by NATIONAL PETROLEUM NEWS found the rumor to be without foundation. It was found that two of the three plants mentioned have found it necessary to lease a few clean cars to care for their heavy export shipments of gasoline and that tracks are not glutted with loaded cars.

Navy has been very dull during the week. In spite of that fact but few cars have been offered out at 10½ cents. A majority of the refiners are holding for 10¾ cents and a few are demanding 11 cents. Interest has been more keen on 58-60, 450 end point material lately. This has been selling at 10½ cents per gallon.

Kerosene has been weakening slowly. The general price on today's movement is 4½ cents per gallon and several plants are making offerings. Prime white distillate is off ¼ cent in sympathy with kerosene. The price difference between light straw distillate and kerosene has been growing narrower on recent trading. Gas oil and the straw distillates are well maintained.

Fuel oil has slipped down another nickel per barrel during the week. Some plants are selling as low as $1.10 per barrel. In Wichita Falls a majority of the refiners have been holding their quotations at $1.25 per barrel.

Spot crude is inactive. Producers are having difficulty in obtaining any premium over the posted market. Archer county production is increasing satisfactorily and there has been some congestion in the pipe lines pending enlargement of pumping capacity.

April future trading has not been apparent thus far. One refiner was offered 11 cents on Navy over the month but refused the business at that figure. Refiners generally feel that the month will bring better business conditions for them.

Refiners' and Jobbers' Supplies

Following are the average market prices for the week on the principal materials used by refiners and jobbers, f. o. b. shipping point as effective this date.

***Benzo**

	Mar. 24	Mar. 17
Pure Water White, Tanks .....gal.	—.25–30	25–30
Drums.....gal.	—.30–35	30–35
90%.....Tanks.....gal.	—.25–28	28–28
Drums.....gal.	—.28–33	28–33

Refiners' Supplies

Soda Ash light 58% bags cwt.	–$1.38	–$1.38
Silicate of Soda 60 deg.....Drums.....cwt.	–1.70	–1.85
Sal Soda wks.....cwt.	1.10–1.25	1.10–1.25
Caustic Soda 76% solid cwt.	–3.10	–3.10
Chloride of Lime.....cwt.	.....	.....
Works.....	1.90–2.30	1.75–2.00
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point.....per ton	10.00–12.00	10.00–12.00

Jobbers' Supplies (Open Market)

Vegetable Oils—		
Linseed carloads Spot...gal.	–.90	–.93
March-April.....	–.90	–.93
May-August.....	.89–.90	.91–.92
Tanks, spot.....	–.86	–.87
Less carload Spot.....gal.	–.95	–.96
5 Bbls.....gal.	–.98	–.99
Less than 5 Bbls. Spot.....	–.98	–.99
Boiled, tank Spot.....gal.	–.88	–.89
Boiled, carloads Spot....gal.	–.94	–.95
*Soya Bean Spot, Tanks..lb.	–.10½	–.10½
Animal Oils—		
English Degras.....lb.	–.04¾	–.04¾
Domestic Degras, bbls. carloads.....lb.	–.03¾	–.03¾
*Horse.....lb.	.07½–.08	.07½–.08
Oleic Acid—		
Dist.....lb.	.08¾–.09¼	.08¾–.09¼
Saponified.....lb.	.08¾–.09¼	.08¾–.09¼
Lard Oils—		
Prime Winter Strained.. 1 to 1½ ffa. 40/45c.t.lb.	.14½	8.14½
Extra Winter Strained.. 2 to 4½ ffa. 40/45c.t.lb.	.12¾	.12¾
Extra..... 4 to 5 ffa. 40/45c.t.lb.	.11¾	.11¾
Extra No. 1..... 7 to 10 ffa. 40/50c.t.lb.	.11½	.11½
No. 1.....15 to 18 ffa. 40/45c.t.lb.	.11¼	.11¼
No. 2.....22 to 25 ffa. 40/45c.t.lb.	.11	.11
Prime Edible Tallow under 1¼ ffa. 40/45c.t.N.Y.....lb.	08¾–.09	–.09
Tallow acidless.....lb.	–.11¼	–.11½
Lard Stearine.....lb.	–.14	–.14
Oleo Stearine.....lb.	–.09¾	–.09⅝
Neatsfoot Oil—		
Pure.....bbls.-lb.	.14¾	.14¾
Extra.....do lb.	.11½	.11½
No. 1.....do lb.	.11¼	.11¼
Cold pressed.....lb.	.17½	.17½
Fish Oils		
Menhaden Oil Light pressed.....gal.	–.60	62–.64
White.....gal.	.65–.67	–.67
Yellow bleached.....gal.	.63–.65	–.65
*Herring, tank cars coast.....gal.	–.50	–.50
Whale, extra winter bleached.....gal.	–.81	–.81
Seal.....gal.	Nominal	
Naval Stores—		
Turpentine, N. Y.....gal.	1.02–1.03	1.00
Turpentine†.....gal.	.96¼	.93½
Rosin B. N. Y.....Bbl.	5.65	5.80
Rosin F. N. Y.....Bbl.	5.70	5.80
Rosin B†.....Bbl.	4.60	4.55
Rosin F†.....Bbl.	4.60	4.55
Rosin Oil 1st run.....gal.	.43	.43
Rosin Oil 2nd run.....gal.	.47	.47
Pine Tar—		
Kiln Burnt.....Bbl.	11.00	11.00
Retort.....Bbl.	11.00	11.00

†Savannah, Ga. market.
*Nominal.

Benzol Demand Active; Prices Are Firm

By Special Correspondent

NEW YORK, March 24.—Bleaching powder was somewhat firmer and demand is better than anticipated. Makers were asking $1.90 in large drums, carlots at the works, while smaller quantities were held at slightly higher prices. Caustic soda was rather quiet although there was good contract movement going on. The export demand was somewhat better than expected and prices were steady. Soda ash was steady but business was chiefly against standing contracts. Leading makers are asking $1.25 a hundred pounds for the light ash, in bulk at the works. Dense ash was quoted at $1.35, same basis.

Sulfuric acid was quiet. Demand for benzol was active and prices were firm. Regardless of the larger output, offerings are still small.

Animal oils were rather flat last week and very few price changes took place. Business at degras was confined to very small quantities while both export and domestic buying in lard oil was along hand-to-mouth lines. Neatsfoot oil was steady and the aggregate turnover for last week was fair. Oleo oil was easier in tone, but no price changes worth mentioning took place. Stearic acid was quiet. Red oil was in routine demand at unchanged prices.

Spirits of turpentine prices were a trifle firmer last week and on Saturday local distributors were asking $1.02 to $1.03 a gallon in barrels, ex-yard. In the main, buying was confined to rather limited quantities and no export business to speak of developed. The strength was largely attributed to the improved conditions at the primary points in the south. The rosins did not divulge any important changes. Buyers showed little interest in offerings at present prices. Export buying was sluggish and apparently for immediate requirements. Trading in tar was of a light routine nature, while not a great deal of animation was noted in rosin oil.

Heavy arrivals of flaxseed coupled with light offerings of resale oil were held largely responsible for the weakness in linseed oil. There was a fair demand for March delivery and business was put through at 92 cents a gallon in carlots, cooperage basis. It was likely that on a firm bid, 90 cents could have been done. Crushers were offering May-September at 90 cents a gallon in carlots, cooperage basis, but business was reported at 89 cents, and it is doubtful if a bid at 88 cents would have been done. There was little or no interest shown by consumers in the futures, and crushers were open to counter propositions. Students of the situation predict further declines in linseed oil prices during the not distant future.

Crude Oil Prices All Fields

EASTERN FIELDS

	1924 Mar. 24	1923 High		1923 Low		1922 High		1922 Low	
Bradford-Allegany	$4.50	Feb.15	$4.25	Nov.13	$2.60	Jan.1	$4.00	July 19	$3.00
Other Pennsylvania	4.00	Feb.15	4.00	Nov.13	2.35	Jan.1	4.00	July 19	3.00
Cabell	2.20	Feb.15	2.76	Nov.13	1.20	Jan.1	2.61	July 19	1.86
Corning	2.15	Feb.15	2.30	Nov.14	1.25	Jan.1	2.40	July 20	1.75
Somerset	2.30	Feb.15	2.55	Nov.13	1.15	Jan.1	2.40	July 19	1.65
Somerset Light	2.50	Feb.15	2.80	Nov.13	1.30	Jan.1	2.65	July 19	1.90
Ragland	1.10	Feb.15	1.10	July 10	.75	Jan.1	1.25	July 19	1.00

Somerset oil run prior to Oct. 1, 1923, takes price of 6 cents lower than above quotations.

CENTRAL STATES FIELDS

Wooster	$2.15	Feb.19	$2.50	Nov.9	$1.25	Jan.1	$2.70	Sept.21	$1.90
Lima	2.28	Feb.19	2.58	Nov.9	1.43	Jan.1	2.48	July 20	1.98
Indiana	2.08	Feb.19	2.38	Nov.9	1.23	Jan.1	2.28	July 20	1.78
Princeton	2.07	Feb.19	2.37	Nov.8	1.22	Jan.1	2.27	July 20	1.77
Lodi	2.15	Feb.19	2.50	Nov.9	1.25	Jan.1	2.70	July 20	1.90
Illinois	2.07	Feb.19	2.37	Nov.8	1.22	Jan.1	2.27	July 20	1.77
Waterloo, Ill	1.55	Feb.19	1.85	Nov.9	.70	Jan.1	1.75	July 20	1.25
Plymouth	1.45	Feb.19	1.75	Nov.9	.60	Jan.1	1.65	July20	1.15
Canadian Petrolia	2.68	Feb.19	2.98	Nov.9	1.83	Jan.1	2.88	July 20	2.38

MID-CONTINENT AND NORTH TEXAS FIELDS

Below 30	$1.25	39 and above	$2.25
30-32.9	1.45	Currie	2.25
33-35.9	1.75	Mexia	2.00
36-38.9	2.00	Powell	2.00

Magnolia's Price Schedule
North and North-Central Texas, Okla., and Kan.

Under 28	$1.00	39 and above	$2.25
28-30.9	1.20	Corsicana, light*	2.00
31-32.9	1.45	Corsicana, heavy	1.00
33-35.9	1.75	Thrall	1.00
36-38.9	2.00	*Including Powell	

NORTH LOUISIANA-ARKANSAS FIELDS

Caddo, 38 degrees and above	$1.85	do 35 to 37.9	$1.65
do 35 to 37.9	1.75	do 32 to 34.9	1.50
do 32 to 34.9	1.65	De Soto	1.85
do below 32	1.50	Crichton	1.65
Homer, 35 and above	1.85	Bellevue	1.55
do 33 to 34.9	1.75	Smackover, 26 and above	1.35
do 31 to 32.9	1.65	25 to 25.9	1.20
do below 31	1.50	24 to 24.9	1.10
Haynesville, 33 and above	1.75	Below 24 Be	1.00
do below 33	1.65	Stephens 28 and above	1.40
El Dorado, 33 and above	1.85	Stephens 26-27.9	1.35
El Dorado, below 33	1.75	Stephens, 23-25.9	1.20
Bull Bayou, 38 and above	1.80	Stephens Below 23	1.00

GULF COASTAL FIELDS

	1924 Mar. 24	1923 High		1923 Low		1922 High		1922 Low	
Spindletop	$1.80	Mar.15	$1.75	Aug.18	$1.00	Jan.1	$1.25	Dec.30	$1.25
Goose Creek "A"	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Goose Creek "B"	1.50	Mar.15	1.50	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Sour Lake	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Humble	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Batson	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Hull "A"	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Hull "B"	1.50	Mar.15	1.50	Jan.1	.80	Jan.1	1.25	Dec.30	1.25
West Columbia	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Edgerly	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Vinton	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Jennings	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Dayton	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Saratoga	1.80	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Orange "A"	1.80								
Orange "B"	1.50								
Pierce Junction "A"	1.80								
Pierce Junction "B"	1.50								

WYOMING FIELDS

Elk Basin	$1.95	Feb.17	$2.10	Nov.9	$ .95	Jan.1	$1.90	Aug.4	$1.20
Grass Creek	1.95	Feb.17	2.10	Nov.9	.95	Jan.1	1.90	Aug.4	1.20
Big Muddy	1.50	Feb.17	1.65	Nov.9	.45	Jan.1	1.40	Aug.4	.70
Salt Creek	1.60	Feb.17	1.65	Nov.9	.60	Jan.1	1.40	Aug.4	.70
Lance Creek	1.90	Feb.17	2.10	Nov.9	.80	Jan.1	1.90	Aug.4	.20
Rock Creek	1.70	Feb.17	1.75	Nov.9	.60	Jan.1	1.50	Aug.4	.80
Osage	1.90	Feb.17	2.10	Nov.9	.80	Jan.1	1.90	Aug.4	1.20
Cat Creek, Mont	1.95	Feb.17	2.10	Nov.9	.95	Jan.1	1.90	Aug.4	1.20
Sunburst, Mont	1.05	Feb.17	1.50	June 6	.70				

CALIFORNIA

14-19.9	$1.00	25-25.9	$1.10	30-30.9	$1.25
20-20.9	1.01	26-26.9	1.13	31-31.9	1.28
21-21.9	1.02	27-27.9	1.16	32-32.9	1.31
22-22.9	1.03	28-28.9	1.19	33-33.9	1.34
23-23.9	1.05	29-29.9	1.22	34-34.9	1.37
24-24.9	1.07			35 and above	1.40

Weather Man Is A Bear In The Market

CHICAGO, March 24.—More rain and snow are predicted for this week to wet the roads and dampen the spirits of refiners. The weather bureau here further indicates that temperatures will be as cool as is customary at this season.

Winter ended officially on Thursday, March 20, and, in leaving, presented the public with a snow varying in depth from five to eight inches in northern Indiana and Illinois. It was spread out all over the eastern half of the United States except in the region of Ohio river the fall was mostly rain or snow that melted quickly. The streets of Milwaukee were dry on that day, however, the northwest being exempted from the precipitation.

No part of the United States escaped without precipitation last week, but the heaviest fall was on Thursday, being soft wet snow or sleet in the middle west. More than two inches of rain fell in Washington, D. C., and more than an inch in several places in Florida. The weather bureau in Los Angeles officially reported snow on Thursday but it is understood the Chamber of Commerce is taking steps to have it stricken from the records.

Oil Dividends

	Amount	Pay-able	Stock of Record
British-American q	50c	Apr. 1	Mar. 24
Cities Service m	½%*	May 1	Apr. 15
do m	1¼%**	May 1	Apr. 15
do pfd. m	½%	May 1	Apr. 15
do pfd. B.m	½%	May 1	Apr. 15
Indiana Pipe L.q	$2	May 15	Apr. 16
Mexican Pet. q	$3	Apr. 21	Mar. 31
do pfd. q	$2	Apr. 21	Mar. 31
Mountain Prod. q	20c	Apr. 2	Mar. 15
do extra	20c	Apr. 2	Mar. 15
Ohio Fuel Supply q	62½c	Apr. 15	Mar. 31
Pan-American q	$1	Apr. 21	Mar. 31
do B. q	$1	Apr. 21	Mar. 31
Prairie Pipe q	$2	Apr. 15	Mar. 31
White Eagle q	50c	Apr. 20	Mar. 31

*Cash scrip. **Stock scrp.¾

Financial Notes

Mexican Petroleum Co.—Dividend on common stock has been reduced from $4 to $3 per quarter.

Pan-American Petroleum & Transport Co.—Dividends reduced from $2 to $1 per quarter.

The Texas Co.—All directors re-elected at annual meeting. D. J. Morgan elected a vice-persident and all other officers re-elected.

Barnsdall Corp.—All directors re-elected at annual meeting.

PENSACOLA, FLA., March 21.—Sherrill Oil Co. recently opened a bulk station at Blountstown, Fla., and a bulk and service station at Camden, Ala.

OIL STOCKS AND FINANCES

Indiana Standard's Net Slumps 8 Million

CHICAGO, March 24.—The report of Standard Oil Co. of Indiana shows a decline of almost $8,000,000 in net profits after taxes and depreciation last year from net of 1922. Average earnings per share were $4.68 on 8,868,267 shares as compared with $5.60 on 8,807,265 shares in 1922.

The company paid $2.50 per share in dividends on the $25 stock, after the distribution of 100 per cent in stock at the end of 1922. In 1922 the company paid $4 a share so the 1923 dividend was equivalent to $5 on the stock outstanding in 1922. Net profits for this company since the dissolution and rate, compare:

	Net profits	Rate
1923	$41,538,499	*18.7%
1922	49,381,104	*22.4%
1921	21,316,561	19.8%
1920	43,335,977	**49.1%
1919	25,742,394	†85.8%
1918	21,964,009	73.2%
1917	25,828,694	86.1%
1916	30,043,615	100.0%
1915	15,898,376	52.9%
1914	6,590,924	21.9%
1913	14,687,696	48.9%
1912	13,994,648	46.6%

*After 100% stock dividend.
**After 150 per cent stock dividend and $25 tock.
†On $100 stock

The company's investment in plant and equipment was increased $9,159,691 after allowing for $5,011,755 depreciation. This increase was made from earnings showing a continuation of the company's policy of reinvesting a part of its profits in its own business.

The securities and investment account shows an increase of $16,184,460. This represents its holdings of marketable securities and investments in subsidiary companies. As these two items are not segregated it is impossible to determine the company's current assets but cash, accounts receivable and merchandise amount to $73,984,623 at the close of the year as against accounts payable and reserves amounting to $29,744,435.

The book value of the stock increased from $30.57 at the end of 1922 to $34.85 on Dec. 31, last.

Cleveland Stock Market

March 21

	Par	Bid	Asked	High	Low
Canfield Oil Co.	$100	133½	.....	.....	.....
do pfd	100	.....	95	95½	95
National Refining	25	36	.....	53	33¾
do pfd	100	121	.....	126	116
Paragon Refining	25	5¼	6	12¾	5¼
do pfd	100	40	60	75	40
Fred G. Clark Co.	10	2¼	3½	6	2

National Transit's Profits High In 1923

OIL CITY, PA., March 24.—Earnings of the National Transit Co. last year were larger than in 1922, the annual report shows. Net profits after depreciation and taxes were equivalent to $2.01 a share as compared with $1.82 a share in 1922. Book value at the end of the year was $21.64 a share as against $21.63 a share at the end of 1922. Dividends paid were $2 a share as against $1.75 the preceding year.

Income accounts for five years compare:

	1923	1922	1921	1920	1919
Net earnings*	$1,024,572	930,203	$1,853,459	$2,703,424	$2,723,025
Dividends	1,018,000	890,750	1,781,500	1,908,750	2,545,000
Miscel. appropriations	733	900	5,370	706,890	60
Surplus	$ 5,839	$38,553	$ 66,589	$ 87,784	$ 177,965

*After depreciation and taxes.

Balance sheets as of Dec. 31 compare:

ASSETS

	1923	1922	1921	1920	1919
Pipe line plant	$ 8,506,279	$ 8,390,422	$ 8,398,808	$ 8,088,279	$ 8,070,627
Other investments	8,031,728	7,467,088	7,257,572	7,197,823	7,644,087
Cash	646,224	366,740	314,069	361,838	193,908
Acc'ts receivable	2,287,510	1,725,633	1,958,176	2,651,638	1,046,361
Deferred assets	47,256	47,256	123,094	65,667	35,124
Unadjusted debits	6,969	4,964	3,287	5,472	15,737
Total	$19,525,966	$18,002,103	$18,055,006	$18,370,717	$17,005,844

LIABILITIES

Capital stock†	$ 6,362,500	$ 6,362,500	$ 6,362,500	$ 6,362,500	$ 6,362,500
Current liability	154,617	192,972	163,402	148,159	178,097
Unadjusted credits	*8,356,673	*6,800,293	*6,921,319	3,176,494	2,222,151
Depreciation	.....	.....	.....	4,142,368	3,789,685
Surplus	4,652,176	4,646,338	4,607,785	4,541,196	4,453,411
Total	$19,525,966	$18,002,102	$18,055,006	$18,370,717	$17,005,844

†Par value $12.50.
*Includes reserves for depreciation, fire insurance, tax liability and compensation insurance.

Standard Oil Co. of Indiana Report

Consolidated income accounts of Standard of Indiana compare:

	1923	1922	1921	1920	1919
Net earnings*	$46,938,499	$55,881,104	$23,288,348	$61,377,803	$34,604,417
Tax reserve	5,400,000	6,500,000	2,000,000	20,404,319	9,796,624
Net profit	$41,538,499	$49,381,104	$21,288,348	$40,973,484	$24,807,793
Dividends	22,106,839	17,453,994	15,686,124	9,116,678	7,200,000
Surplus	$19,431,660	$31,927,110	$ 5,602,224	$31,856,806	$17,607,793

*After depreciation.

Consolidated balance sheets of Standard of Indiana as of Dec. 31 follow:

ASSETS

	1923	1922	1921	1920	1919
Plant, equipment	$131,427,167	$122,944,735	$117,046,483	$ 96,761,465	$ 77,871,375
Depreciation	34,821,321	29,809,566	25,342,780	19,788,794	16,643,565
Net valuation	$ 96,605,846	$ 93,135,169	$ 91,703,703	$ 76,972,671	$ 61,227,810
Real estate	24,796,043	19,110,028	15,747,183	14,262,545	10,288,439
Personal property	4,768,435	4,945,553	7,187,943	6,176,321	5,135,630
Accounts receivable	13,512,124	11,526,007	8,836,056	14,350,188	8,836,243
Securities, invest	138,779,667	122,595,207	117,285,724	49,643,326	14,323,156
Merchandise	46,241,822	52,335,293	55,326,799	72,093,143	52,046,052
Cash	14,230,677	15,141,946	9,588,434	4,136,464	2,614,694
Total	$338,934,613	$318,789,203	$305,675,842	$237,634,658	$154,672,024

LIABILITIES

Capital stock	$221,706,668	$220,181,638	$107,360,455	$ 88,038,313	$ 30,000,000
Bonds	79,500	93,500	110,500	184,000	250,500
Accounts payable	19,843,122	9,541,595	24,123,057	13,177,215	9,507,643
Reserves	9,901,313	19,940,120	14,469,206	20,404,319	9,796,625
Capital liabilities	.....	.....	16,389,914	.....	.....
Capital surplus	56,519,062	54,877,960	50,995,494	29,205,820	.....
Earned surplus	30,884,948	14,154,390	92,227,216	86,624,991	105,117,256
Total	$338,934,613	$318,789,203	$305,675,842	$237,634,658	$154,672,024

Transactions In Oil Shares on New York Stock Exchange

1923 High	1923 Low	1924 High	1924 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Mar. 22 Sales	First	High	Low	Last	Ch'ge
.....	.....	43	25	(sh) 200,000	N.P.	American Republics	.....	.....	.....	.....	.....	.....	.....	.....
29½	24⅞	34⅛	28¼	$ 49,336,450	$25	Associated Oil	37½cQ	Jan. 25, 24	12,500	31⅝	31⅝	29¾	31½	— ⅜
160	98¾	140⅛	118	50,000,000	100	Atlantic Refining	$1Q	Mar. 15, 24	1,400	122½	123¾	†118	119½	—5⅛
120	115	118	116¾	20,000,000	100	do pfd	$1¾Q	Feb. 1, 24	.....	.....	.....	.....	.....	.....
35	9⅞	18⅛	14	14,000,000	25	Barnsdall Corp. A	.....	Apr. 30, 21	4,100	16⅝	16⅞	15½	16	— ½
22	6	14⅜	10	3,713,275	25	do B	.....	Apr. 30, 21	800	13½	13⅞	13½	13⅝	— ⅛
9⅛	1¾	5	1½	(sh) 150,000	N.P.	Caddo Central O. & R	.....	.....	12,800	2⅜	2¾	† 1½	1¾	—1¼
29⅜	17⅛	29¼	23⅛	$ 17,377,000	$25	California Petroleum	4¾cQ	Dec. 1, 23	34,600	24⅜	25⅜	†23⅛	25	+ ⅛
110½	90¾	107	97½	12,989,500	100	do pfd	$1¾Q	Jan. 1, 24	400	98⅛	99	†97½	97½	—2
62¼	22¾	40¼	32	(sh) 1,217,427	N.P.	Cosden & Co	.....	Aug. 1, 23	49,500	35¼	35⅞	33¼	35⅜	+ ⅜
99⅜	83¼	95	91	$ 6,998,000	$100	do pfd	$1¾Q	Mar. 1, 24	800	92⅞	93	91⅞	91⅞	—1
54	23	46¾	37½	19,880,000	100	General Asphalt Co	.....	.....	11,700	41¾	41¼	37½	39⅝	—1½
83	60	81	71¾	7,416,000	100	do pfd	$1¼Q	Mar. 1, 24	400	74½	74⅝	73⅛	73⅞	—3⅛
78	40¾	82½	66	25,000,000	100	Houston Oil Co	.....	.....	12,600	69	70¾	67	70	—1
11¾	3¾	9½	6¾	(sh) 450,000	N.P.	Independent Oil & Gas	.....	.....	2,000	7⅜	7⅝	6⅞	7⅜	+ ⅜
19	1	2⅞	1	$5,000,000	$25	Indiahoma Refining Co	.....	July 1, 21	1,900	1	1¼	1	1¼	+ ⅛
8½	3½	5¾	4	7,830,450	10	Indian Refining Co	.....	Dec. 15, 20	600	4¼	4¼	† 4	4	—1
49½	40½	65	63	2,296,400	100	do pfd	.....	Dec. 15, 21	.....	.....	.....	.....	.....	.....
19¼	7¼	16⅞	13	(sh) 671,280	N.P.	Invincible Oil Corp	.....	.....	6,000	14½	14¾	14	14¾	— ⅜
3½	¾	1	⅝	$ 1,797,220	$10	Kansas & Gulf Corp	.....	.....	100	¾	¾	⅝	⅝	0
28⅜	16	37⅛	25½	(sh) 259,400	N.P.	Maracaibo Oil	.....	.....	13,300	30⅜	30⅜	27¾	28	—2¼
59⅛	17½	42	35	(sh) 1,736,454	N.P.	Marland Oil Co	.....	July 1, 23	28,800	37	37⅜	35⅛	37⅛	— ¾
203	182	.....	.....	$ 45,942,800	$100	Mexican Petroleum Co	$4Q	Jan. 20, 24	.....	.....	.....	.....	.....	.....
105¼	100¼	.....	.....	12,000,000	100	do pfd	$2Q	Jan. 20, 24	.....	.....	.....	.....	.....	.....
23¾	5¾	24½	14½	(sh) 444,939	N.P.	Mexican Seaboard Oil	.....	June 1, 23	11,900	18⅝	19	17¾	18¾	— ⅜
23½	6	22¾	12⅞	(sh) 261,000	N.P.	do V. T. C	.....	June 1, 23	3,300	17⅝	17⅝	16½	17½	— ⅛
12¾	3½	6⅞	4½	$ 29,791,450	$10	Middle States Oil Corp	.....	July 1, 23	15,600	4¾	4¾	† 4½	4⅝	— ⅛
67	31	33	32	$ 39,626,000	25	Ohio Fuel Supply Co	6⅔cQ	Jan. 15, 24	200	32½	32½	32½	32½	+ ¼
3⅛	⅜	2¼	1⅜	5,359,425	5	Oklahoma P. & R. Co	.....	Apr. 1, 21	3,200	2	2⅛	2	2⅛	+ ⅛
52⅜	31¾	58¼	48¾	(sh) 3,500,000	N.P.	Pacific Oil Co	$1S.A.	Jan. 21, 24	76,200	51¼	51½	49¾	51¾	0
93⅛	53	61½	42½	$ 48,292,450	$50	Pan American P. & T	$2Q	Jan. 21, 24	18,300	47	48⅜	46¾	47¾	— ¾
86	50½	59¾	41¼	81,088,900	50	do Class B	$2Q	Jan. 21, 24	6,900	45½	47⅜	45¼	46¾	— ¾
6¼	1¾	3½	2¼	(sh) 198,770	N.P.	Panhandle P. & R	.....	.....	100	3	3	3	3	0
68	27⅜	40¼	35	$ 3,855,500	$100	do pfd	.....	July 2, 23	100	39⅛	39½	39½	39½	— ⅜
69⅜	19¾	42½	33¾	(sh) 1,479,397	N.P.	Phillips Petroleum	50cQ	Jan. 2, 24	56,700	40	40⅞	37¾	40⅜	+ ⅛
6	1¾	4½	2¼	$ 29,622,925	$25	Pierce Oil Corp	.....	.....	2,600	2½	2½	2⅜	2½	— ⅛
44½	16	39¾	20	15,000,000	100	do pfd	.....	Feb. 1, 22	1,100	27	27	25	25¾	—2¼
58½	17	43½	30½	34,950,858	50	Producers & Refiners	.....	Sept. 15, 23	10,800	34⅛	34½	†30½	32	—2¼
49½	36	47⅜	45½	2,845,350	50	do pfd	87½cQ	Feb. 4, 24	200	45½	45½	†45½	45½	—1
32	16¾	26¾	22¾	69,998,450	25	Pure Oil Co	37½cQ	Mar. 1, 24	5,200	24	24	23	23⅝	+ ⅛
100	82¾	98½	92	15,000,000	100	do 8% pfd	$2Q	Jan. 1, 24	100	94	94	94	94	—3
55⅜	40½	59¼	48	(sh) 643,916	13.40	Royal Dutch, N. Y. shares	$1.24	Feb. 11, 24	16,800	52¼	56⅞	51⅞	54⅞	+1⅝
41¼	29¼	41¼	33	(sh) 155,519	£2	Shell Transport & T	$1.13⅓	July 26, 23	800	39½	40½	39¼	39¼	+ ⅛
19¼	12¾	20⅝	16¼	(sh) 8,338,790	N.P.	Shell Union Oil Corp	25cQ	Dec. 31, 23	26,700	18¾	18⅜	17⅝	18¼	— ⅜
95	89½	95	91½	$ 20,000,000	$100	do pfd	$1½Q	Feb. 15, 24	200	93	93½	93	93½	+ ½
16	6¾	14½	10⅜	6,535,100	10	Simms Petroleum Co	.....	.....	12,900	13¾	*14½	13¾	14½	+ ⅝
39⅜	16	27⅛	19⅜	(sh) 4,479,999	N.P.	Sinclair Consolidated	50cQ	Feb. 29, 24	32,300	22⅝	23	21¾	22⅜	— ⅜
99⅜	80¾	88¾	80¼	$ 19,278,600	$100	do pfd	$2Q	Feb. 15, 24	200	82¾	82½	82¾	82½	— ⅛
35	12⅜	29	22⅜	20,579,090	25	Skelly Oil Co	.....	.....	11,500	24	24	†22⅜	23¼	+ ¼
64⅝	47⅜	68⅝	58⅜	232,419,950	25	S. O. California	50cQ	Mar. 15, 24	28,100	61¼	62⅜	60	62	0
44⅜	30⅞	42¼	36¼	501,824,200	25	S. O. New Jersey	25cQ	Mar. 15, 24	17,700	37½	37½	†36⅛	37½	— ¼
118¼	114¾	118¾	115¾	199,972,900	100	do pfd	$1¾Q	Mar. 15, 24	800	117	117	116¾	116¾	— ⅛
6¾	2	4½	2¾	(sh) 451,708	N.P.	Superior Oil Corp	.....	Dec. 20, 20	10,700	4½	5	4	4⅜	+ ⅜
52⅛	34¾	45⅜	41½	$164,450,000	$25	The Texas Co	75cQ	Dec. 31, 23	13,300	42¼	42⅝	41½	42	0
24¾	5½	15⅛	9	8,380,340	10	Texas Pacific Coal & Oil	.....	June 30, 23	6,400	10¾	10¾	10	10⅛	— ⅛
144	94	151	120	49,996,800	100	Tide Water Oil Co	$1Q	Dec., 30, 23	2,100	134	134	129¾	132½	—6
14½	1¾	6⅛	4	(sh) 2,000,000	N.P.	Transcontinental Oil Co	.....	.....	21,800	4⅛	4¼	4	4⅛	0
99¾	81	102½	94	$ 18,000,000	$100	Union Tank Car Co	$1½Q	Mar. 1, 24	800	99½	101	99⅝	101	+ ¾
114	100	109½	106¼	12,000,000	100	do pfd	$1¾Q	Mar. 1, 24	300	109	*109⅜	109	109⅝	+1⅛
30¾	20	29¾	25½	(sh) 460,000	N.P.	White Eagle Oil & Ref	50cQ	Jan. 20, 24	1,300	25¾	26½	25½	26	—1
5⅞	¼	1⅛	½	(sh) 288,622	N.P.	White Oil Corp	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*New High †New Low xEx—Dividend Total Sales 610,600

Standard Oil Stock Traded In New York Curb Market

1923 High	1923 Low	1924 High	1924 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Mar. 21 Sales	First	High	Low	Last	Ch'ge
19¾	13⅛	18	15⅛	£3,000,000	£1	Anglo American	22c S.A.	Dec. 17, 23	3,900	17½	17¼	16⅞	17	— ¼
7¾	2½	4⅞	3	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	500	3½	3½	†3	3	— ⅛
150	108	265	155	$ 1,000,000	$100	Borne-Scrymser	$4S.A.	Oct. 15, 23	290	258	258	230	235	—21
94½	69	85¾	70	10,000,000	50	Buckeye Pipe Line	$1 Q	Mar. 15, 24	120	70½	71	70½	70½	0
237	207	430	238	1,500,000	100	Chesebrough Mfg. Co	$3½ Q	Dec. 29, 23	180	405	407	401	402	—3
.....	.....	51¾	50⅞	3,000,000	25	do new w. i	.....	.....	2,300	51⅞	51⅞	50⅞	50⅝	.....
118	110	115	115	1,000,000	100	do pfd	$1¾ Q	Dec. 28, 23	.....	.....	.....	.....	.....	.....
50	32½	54¼	45	10,000,000	25	Continental Oil	50c Q	Mar. 15, 24	300	48¼	48¼	46¾	46¾	—2¼
47½	15	20	16	1,500,000	25	Crescent Pipe Line	.....	Sept. 15, 23	.....	.....	.....	.....	.....	.....
168	85	144	110¾	3,000,000	100	Cumberland Pipe Line	$8	Mar. 15, 24	300	134	134	127	129	—6
117	87	105	95	3,000,000	100	Eureka Pipe Line	$2 Q	Feb. 1, 24	30	99½	99¾	99	99¾	— ¼
78	55	69¾	61	16,000,000	100	Galena Signal Oil	$1Q	Dec. 31, 23	255	61	62½	†61	61	— ½
105	104	.....	.....	4,000,000	100	do new pfd	$2Q	Dec. 31, 23	.....	.....	.....	.....	.....	.....
116	108	.....	.....	2,000,000	100	do old pfd	$2Q	Dec. 31, 23	.....	.....	.....	.....	.....	.....
41¾	28	43¾	37⅜	43,750,000	25	Humble Oil & Ref	30c Q	Jan. 2, 24	4,800	42½	42⅝	40¾	41	—1¼
171	115	161	136	20,000,000	100	Illinois Pipe Line	$3 S.A.	Dec. 31, 23	50	145	145	142	144	+1
123	92	119	106	39,222,750	25	Imperial Oil, coupons	75c Q	Mar. 1, 24	1,125	108½	108¾	†106	107½	— ⅜
105	78	100	88	5,000,000	50	Indiana Pipe Line	$2 Q	Feb. 15, 24	90	94½	95	92	92¾	—2¼
24¾	13¾	22¼	18⅝	(sh) 7,118,138	N.P.	International Petroleum	25c Q	Jan. 2, 24	21,300	19½	19½	†18⅝	19	— ⅜
168	123	162	138	$180,000,000	100	Magnolia Petroleum	$1 Q	Jan. 5, 24	385	143	143¾	138	138	—6
29	19⅜	25⅞	21⅜	6,362,500	12½	National Transit	25cQ	Mar. 15, 24	1,000	22¾	23	22⅛	22¼	+ ⅛
138	70	97	78	5,000,000	100	New York Transit	50cQ	Jan. 15, 24	20	83½	85	83½	85	+1½
109½	90	107½	94	4,000,000	100	Northern Pipe Line	$5S.A.	Jan. 1, 24	40	101	101½	101	101	—1
85¾	48¾	79½	66¾	60,000,000	25	Ohio Oil Co	$1Q	Dec. 31, 23	3,400	70	70	67	67¾	—2¾
45¾	10½	43	34	10,000,000	25	Penn-Mex. Fuel	.....	.....	1,300	35	38½	35	36½	+ ½
700	152	269	220	54,803,400	100	Prairie Oil & Gas	$2Q	Jan. 31, 24	7,400	247	248	231	236	—11
335	93	111	100	81,000,000	100	Prairie Pipe Line	$2Q	Jan. 31, 24	1,490	106	106	103	104½	—2
212½	161	230	183	4,000,000	100	Solar Refining Co	$5S.A.	Dec. 20, 23	140	201	201	195	195	—6
116	87	100	90½	10,000,000	100	Southern Pipe Line Co	$2Q	Mar. 1, 24	400	95¾	95¾	93	93½	—2½
195	100	171	154	20,000,000	100	South Penn Oil Co	.....	Sept. 30, 22	375	159	159	157	158	—3
88⅛	66⅜	89	81	3,500,000	100	Southwest Pa. Pipe Lines	$2Q	Dec. 31, 23	20	85	85	84	84	—2
69¾	49¾	68¾	59	220,181,638	25	S. O. Indiana	62½cQ	Mar. 15, 24	55,800	61¾	61¾	60½	60¾	—1
57⅜	36⅜	50¾	41¼	8,000,000	25	S. O. Kansas	50cQ	Mar. 15, 24	5,700	43	43	†41¾	41¾	—1¼
133	80	120	107	16,715,221	25	S. O. Kentucky	$1Q	Dec. 1, 23	6,200	111½	112½	109	109¾	—2¼
285	186	256½	198	3,000,000	100	S. O. Nebraska	$5S.A.	Dec. 31, 23	380	242	243	236	240	—2
48⅝	35¾	55¾	42	225,000,000	25	S. O. New York	35cQ	Mar. 15, 24	7,400	43⅛	43¼	42	42½	—1
320	270	336	302	14,000,000	100	S. O. Ohio	$2½Q	Jan. 1, 24	200	327	327	324	325	—3
118	116	119	119	7,000,000	100	do pfd	$1¾Q	Mar. 1, 24	.....	.....	.....	.....	.....	.....
39	21	81	34	1,806,200	100	Swan & Finch	.....	Nov. 1, 19	1,340	61	61	54	58	—3
58⅜	35½	69¼	56½	60,000,000	25	Vacuum Oil Co	50cQ	Mar. 20, 24	24,200	63½	63¾	60½	62¼	—1⅜
28	10	29	25½	100,000	10	Washington Oil Co	.....	Jan. 31, 22	.....	.....	.....	.....	.....	.....

SERVICE IN
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CARL H. PFORZHEIMER & CO.
Specialists in Standard Oil and Miscellaneous oil securities
25 Broad St. New York

New York Curb Bonds

Week Ended Mar. 21

	High	Low	Last	Ch'ge
Anglo-American 7½s	102⅛	101⅞	101⅞	— ⅛
Cities Serv. 7s C	95	94½	95	+ ⅛
do 7s D	91½	90¾	91	0
Galena S O 7s	104⅜	104⅜	104⅜	+ ⅛
Gen Pet 6s	96¼	96¼	96¼	0
Gulf Oil 5s	95½	95	95½	+ ⅛
do 5s '27	100¼	100¼	100¼	0
Maracaibo 7s new	310	290	290	—11
Phillips Pet 7½s w w	102½	102½	102½	0
Pure Oil 6½s	96	95½	95⅞	+ ⅜
S.O.New York 7s '25	102	101½	102	+ ½
do 7s '26	104¾	104¾	104¾	0
do 7s '27	105½	105½	105½	0
do 7s '28	105¼	105¼	105¼	— ¼
do 7s '29	106	106	106	+ ¼
do 7s '30	107½	107	107	+ ½
do 7s '31	106¾	106¼	106½	— ½
do 6½s	107¼	106¾	107	+ ⅜
Sun Oil 6s	99½	99½	99½	0
Tidal Osage 7s	103½	103¼	103½	0
United Oil Prod. 8s	70⅞	68⅛	70	—3
Union Oil Cal. 6s '25	100¾	100⅜	100¾	— ¼
Vacuum Oil 7s	106½	106¼	106½	+ ¼

New York Bonds

Week Ended Mar. 22

	High	Low	Last	Ch'ge
Atlantic Ref deb 5s	98⅜	97½	97½	— ½
Barnsdall 8s	98⅛	97¼	98	+ ¾
Calif Pet s f 6½s	96¼	95¼	96	— ½
Empire G. & F. 7½s	92	91⅜	91½	— ¼
Humble O.&R.5½s	98⅜	97½	98⅜	+ ⅛
Marland				
do 7½s ser B	100¼	99⅞	99⅞	+ ⅛
Mex Pet of Del cvt 8s	102	102	102	— ¾
Pan-Am Pet & Tr 7s	101¼	100⅝	101	+ ⅛
Pierce Oil deb 8s	93⅝	93	93⅝	—4⅜
Prodcrs & Refnrs 8s	109½	108⅛	109½	+ ¼
Sinclair Cons col 7s	92½	91⅜	92½	+1⅛
do 6½s	86⅛	85½	85⅞	0
Sinclair Crude 6s	97⅞	97	97⅞	+ ⅜
do 5½s	98¾	98	98⅝	+ ⅛
Sinclair Pipe Line sf 5	84	83	83¾	+ ¼
Tidewater Oil 6½s	103	102½	102⅝	+1⅜
Union Oil of Cal 6s	100⅞	100¼	100½	+ ¼
Union Tank Car 7s	104½	103¾	103¾	0

New York Curb Market

1923 High	1923 Low	1924 High	1924 Low	Par Value	Stocks	Transactions Week Ended Mar. 21 Sales	First	High	Low	Last	Ch'ge
10	4¼	7	5¾	10	Ark. Nat. Gas	300	5¾	5⅞	5½	5⅞	+ ⅛
1½	.65	1⅝	.95	1	Boston & Wyo	200	1	1 1/16	1	1 1/16	+ 1/16
7⅝	3⅛	6¾	4½	25c	Carib. Synd	1,400	5	5	† 4½	4⅝	— ¼
195	128	155	142	100	Cities Service	1,160	148½	149	144½	145	—3
70	64¼	73¼	67¾	100	do pfd	2,000	72⅝	73	72⅝	72⅞	+ ⅜
6¾	5⅞	6¾	6⅝	10	do pfd. B	700	6½	6¾	6½	6¾	+ ⅛
19½	12¾	16	14½	10	doBkrs. Sh	1,300	14⅜	14¾	†14½	14½	— ¼
7⅝	1½	8¼	2¼	N.P.	Creole Synd	31,600	2⅛	3½	2⅛	3⅛	+ ⅛
18½	5	8	6¼	N.P.	Derby O. & R	100	6¼	6¼	† 6¼	6¼	— ¼
49½	22	34¼	30	N.P.	do pfd						
1	.10	.60	.25	5	Federal Oil	4,000	.26	.26	.25	.25	—.03
38½	24	46	38½	25	General Pet	3,700	43⅜	43⅝	40½	40½	—3
2¼	.23	.60	.30	10	Glenrock Oil	1,000	.32	.32	.32	.32	—.08
68¼	45¾	65	58	25	Gulf Oil Corp	2,700	61	61	58½	59¾	—1¾
9¾	1	2⅝	1¼	N.P.	Gulf State O.& R.	12,500	1.62	1.62	.79	1.00	—.75
4	1½	2⅝	1¾	N.P.	Kirby Petroleum	600	1⅞	1⅞	1¾	1¾	0
5⅛	1¾	4⅞	3	N.P.	Marland of Mexico						
20¼	19¾	19¾	16	10	Mountain Prod	5,700	18⅛	18⅛	17½	18	— ⅛
15¾	12¾			5	Mutual Oil Co						
15½	8¼	14	11⅜	5	do ctfs	31,400	12	12	†11⅜	11½	— ½
6¼	3½	6¾	4⅞	5	New Bradford	2,000	5¼	5¼	5	5	— ¼
52	15⅛	21½	20	10	New England Fuel						
21¾	5	14	9¾	25	New York Oil	300	12⅛	12⅛	12	12	—1
1 1/16	.45	.80	.55	10	Omar O. & G	400	.67	.67	.67	.67	—.06
13	¾	3½	1⅝	N.P.	Peer Oil Corp	900	2½	2¾	2½	2¾	— ¼
14¾	9¾	15⅜	12¾	10	Pennok Oil	8,200	14⅛	14½	13⅞	14¼	+ ⅛
6⅞	2	5¼	3⅞	N.P.	Ryan Consolidated	700	4½	4½	4½	4½	— ⅜
14	6¾	10¾	8¼	10	Salt Creek Cons	700	8½	8½	8¼	8¼	— ⅛
25¼	15¼	23¾	19⅛	10	Salt Creek Prod	3,800	21¾	22	21	22	+ ⅛
4⅞	.75	2½	.80	5	Sapulpa Refining	2,500	2	2	1⅞	1⅞	— ⅛
4	.65	1¾	.68	5	Seaboard O. & G	27,300	1	1 1/16	1	1 1/16	0
13½	6	16	8	10	Tidal Osage	100	12½	12½	12½	12½	— ½
10⅞	4	8¾	6¼	5	Wilcox O. & G	22,500	6½	7½	5⅞	7¼	+ ⅜

Pittsburgh Stock Exchange

1923 High	1923 Low	1924 High	1924 Low	Par Value	Stocks	Transactions Week Ended Mar. 21 Sales	First	High	Low	Last	Ch'ge
10	4¼	7	4⅞	10	Ark. Nat. Gas	725	5¾	5¾	5½	5½	— ⅛
83¾	83	83¾	83¾	N.P.	Columbia Gas						
27	22¾	28¼	26½	25	Lone Star Gas	480	27	27½	27	27½	+ ¼
58	51	54¾	52½	50	Manuf. L. & H	636	53½	53½	52½	52½	—1
19	11	16½	13¾	1	Ohio Fuel Oil	30	13¾	13¾	13¾	13¾	+ ¼
66	30¾	33¾	32	25	Ohio Fuel Supply	1,246	32½	32½	32⅛	32¼	— ¼
24	18¾	25½	22¾	25	Okla. Nat. Gas	555	25¼	25¼	25	25	0
10½	5¾	9¾	8	5	Pittsburgh O. & G	100	8	8	8	8	0
14	5¾	10¾	8	10	Salt Creek Cons	86	8¾	8¾	8	8	— ⅛
13½	7	16½	9½	10	Tidal Osage	100	12½	12½	12	12	— ½
		92	92	100	do pfd	50	92	92	92	92	
29½	25¾	29½	28	25	Union Nat. Gas	150	29	29	28⅞	28⅛	— ⅛

Pittburgh Curb Market

1923 High	1923 Low	1924 High	1924 Low	Par Value	Stocks	Transactions Week Ended Mar. 21 Sales	First	High	Low	Last	Ch'ge
		2¼	2¼	N.P.	Arkansas Fuel w. i						
1⅝	.22	.76	.25	5	Colombia Synd						
2⅜	.26	.70	.54	5	Duquesne Oil						
37	10	7	6	10	Forest Oil						
1¼	1	.15	.15	1	Grant Oil						
68	46¼	64¼	58	25	Gulf Oil Corp						
.03	.02			1	Homer Union						
24½	16¾	21	21	N.P.	International Pet						
8¾	4	6	5¾	10	Marshall Oil						
.36	.15	.39	.01	1	Mex. Wyoming	5,700	.03	.08	.03	.08	+.07
2¾	1¾	2⅞	2¼	1	Oklahoma Eastern	1,180	2½	2⅝	2½	2⅝	+ ⅛
2	.60	.77	.77	10	Omar O. & G						
22½	7	8	6	5	States Oil						
		14	10	10	Tidal-Osage, non-vote						

*New High †New Low xEx Dividend

THE OIL INDUSTRY EXCHANGE

Positions Wanted

Ten Years Practical Experience as refiner and marketer. Familiar with both crude oil and absorption plants. Address Box 108, Mineral Wells, Texas.

Refinery Superintendent—College graduate, at present employed, familiar with light and heavy crudes, pressure still operations, wishes to make change. Would consider superintending a large cracking installation. Apply Box 69, **National Petroleum News.**

Refinery Superintendent, 25 years practical experience in operation and construction, wishes to change. Results guaranteed, salary reasonable to reliable parties. Will go anywhere. References furnished. Box 81.

Foreign Sales Representative
14 years experience as executive in production, refining and marketing with perfect knowledge of languages and conditions in the following countries: Mexico, Spain, France, Germany, Czechoslovakia, Austria and Hungary. Can furnish business and personal references. Box 74.

Executive—Age 44, college education, 20 years successful experience marketing petroleum products in cargo, tank-cars, barrels and direct to consumers. Has travelled Europe, thoroughly familiar with export buyers and conditions; also operation and selection of gasoline filling stations, advertising and purchasing. Full information will be given in correspondence. Salary $6,000. Box 59.

Salesman or Salesmanager
Employed at present, 18 years experience selling fuel oil, gasoline, and lubricating oils, in tank cars and cargo. Well acquainted with buyers in east, also personally acquainted with European buyers. Accustomed to handling big business. Highest references. Box 83.

Advertisers having box numbers should be addressed in care of National Petroleum News, 817 Huron Road, Cleveland, Ohio, unless otherwise specified.

Situations Open

Wanted
A party with experience in mining and preparation of Fullers Earth to investigate and report on deposit of same. Write giving references to
S. S. Lees, 82 Beaver St., New York City.

Wanted—Salesman Chicago Territory

Southwestern marketing company desires services of a real salesman from Chicago territory. Must be able to furnish highest references and be well acquainted with fuel oil trade. Strictly profit sharing basis, we handle all accounts. Replies confidential. Box 84.

For Sale

Pump and Engine For Sale

12 in. twin Viking unloading pump with 3 h. p. Novo Gas Engine. We unloaded our first car of gasoline on the 16th day of January, 1923. Box 82.

Receiver's Sale Of Tank Trucks

Receiver for the Indiana Petroleum Company has three excellent tank trucks for sale as follows:

One 1921 Mack, 2-2½ ton, Model AB4, with 655 gallon compartment tank.

One 1920 White, 2-2½ ton, with 730 gallon compartment tank, equipped with new semi-pneumatic tires.

One 1920 Service, Model 36-4, 2-ton, with 500-gallon tank.

These trucks were completely overhauled just prior to July 18, 1923, have not been used since, and can be bought at a sacrifice. For particulars write

OTIS S. ROMINE,
801 J. M. S. Bldg.,
South Bend, Ind.

For Sale

TANKS, CARS, RAILS

5—8,000-gallon all steel Tank Cars
3—31,000-barrel Oil Storage Tanks
New Tanks of all sizes.

ZELNICKER IN ST. LOUIS
Relayer Rails-Cars-Locomotives-Machinery-Pipe

Service Station handling car load lots of gasoline in Central Ohio for sale. Located corner of Main street on State Highway. Dissolving partnership, reason for selling. Box 77, care of **National Petroleum News.**

Pipe, Valves and Fittings

Due to our large stock on hand, in Pipe, Valves and Fittings, Standard and Extra Heavy, Flanged and Screwed, from ⅛ inch to 24 inches in diameter, we are offering attractive prices for immediate shipment.
Pipe cut and fabricated to specifications. Arrangements for extended credit can be made. Commonwealth Pipe & Supply Company, Inc., Dist. Sales Dept. P. O. Box 5081, Boston, Mass.

Equipment Wanted

Tank Wanted

300 gallon Truck Tank for Ford must be complete and in good condition. Write Canty Service Station, Danbury, Iowa.

"Burning Liquid Fuel"

Learn real facts which have never been published before on the subject of burning liquid fuel, by W. N. Best, the recognized authority.

Send your order and check for **$4** to—

National Petroleum News
810 Caxton Bldg., Cleveland, O.

No matter what you "want," whether it is to buy or to sell, to secure a good man or get a better position The Oil Industry Exchange will connect you with the right party at a minimum expense.

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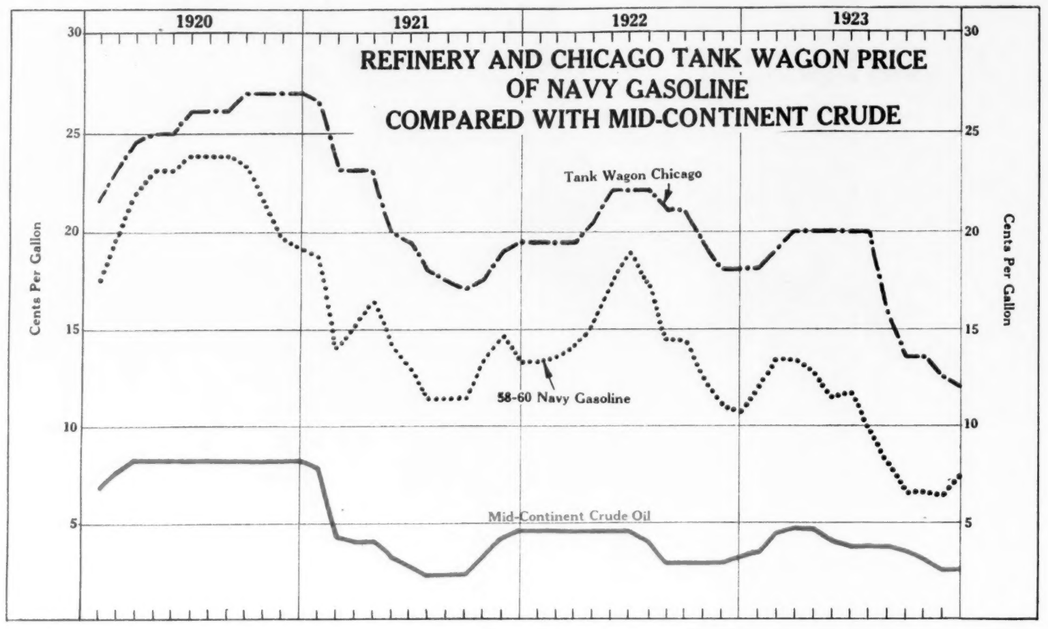
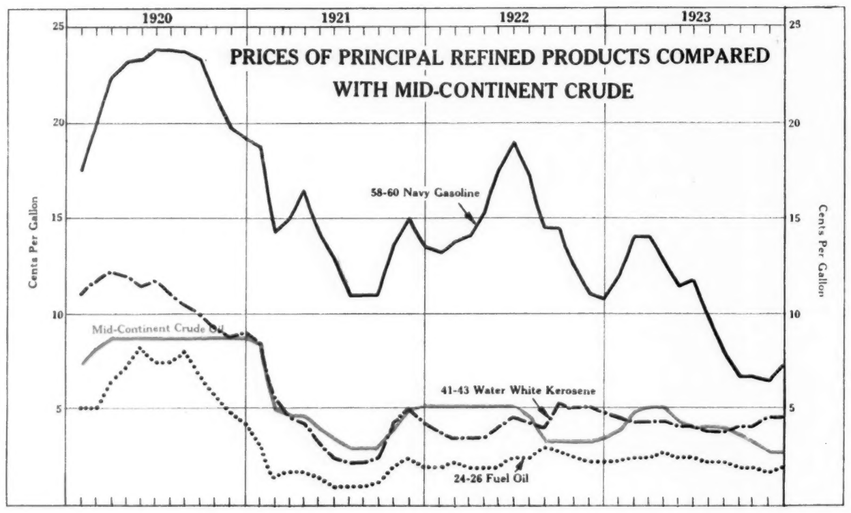
GRAPH HISTORY OF THE OIL INDUSTR





Compiled from its own records by

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Price 50 cents

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From 812 Huron Road, Cleveland

Branch Offices

TULSA, Bank of Commerce Bldg. — HOUSTON, 614 West Bldg. — NEW YORK, 342 Madison Ave. — CHICAGO, 360 N. Michigan Ave.

Subscription Price, $2.50 per Year

Tank Wagon Prices of Gasoline and Kerosene Monthly 1923

		Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15
New York (S. O. N. Y.)	Gasoline	22	23	24.5	24.5	22.5	21.5	21.5	19.5	19.5	18.5	15.5	15.5
	Kerosene	15	15	15	15	14	14	14	14	14	14	15	15
Washington (S. O. N. J.)	Gasoline	21	22	23	23	21	21	21	20	20	18	15	15
	Kerosene	13.5	13	13	13	12.5	12.5	12.5	12.5	12.5	12.5	13.5	13.5
Philadelphia (Atlantic Ref.)	Gasoline	21	22	23	23	21	21	21	19	19	18	16	14
	Kerosene	14	14	14	14	14	14	14	14	14	14	14	14
Cleveland (S. O. Ohio)	Gasoline	19	20	21	21	21	21	20	20	18.5	17	16	16
	Kerosene	13	13	13	13	13	13	13	13	13	13	13	13
Lexington (S. O. Ky.)	Gasoline	20	21	23	23	23	23	21	20	18	17	15	15
	Kerosene	14	14	14	14	14	14	14	14	14	14	14	14
New Orleans (S. O. La.)	Gasoline	16	18	20.5	19.5	17.5	16.5	16.5	13.5	13.5	13.5	12.5	12.5
	Kerosene	13	12	12	12	11	11	11	11	11	11	12	12
Tulsa (Magnolia)	Gasoline	16	18	20	20	15	15	16	16	12	11	11	9
	Kerosene	10	11	11	11	11	11	9	9	9	9	9	9
Chicago (S. O. Ind.)	Gasoline	18	19	20	20	20	20	20	13.4	13.4	13.4	12	12
	Kerosene	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	10	10	10
Omaha (S. O. Neb.)	Gasoline	18.25	19.5	20.5	20.5	20.5	20.5	20.5	14.25	14.25	14.25	12.25	12.25
	Kerosene	12.25	12.25	11.75	11.75	11.75	11.75	11.75	11.75	11.75	10.5	10.5	10.5
Denver (Continental)	Gasoline	18	20	21	21	19	19	19	17	17	15	13	13
	Kerosene	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	12.5	12.5	12.5
Los Angeles (S. O. Cal.)	Gasoline	17	17	17	16	16	16	16	14	10	12	12	12
	Kerosene	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5

Ruling Refinery Prices Prevailing Each Week of 1923 for Principal Products at Pennsylvania Refineries, Compared with

MONTHS	JANUARY					FEBRUARY				MARCH				APRIL					MAY				JUNE				JULY					AUGUST				SEPTEMI		
Weeks	2	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	
54 Naptha	13⅞	14	14	14¼	14¾	14⅞	15¾	15½	15¾	15¾	15¾	15⅝	15¾	15¾	15¼	15½	14⅞	14⅞	14½	13¾	13⅝	13⅞	14⅛	13¾	13⅝	13¾	13¼	13¼	12⅝	12¼	11¾	11¾	11⅜	11⅜	11¼	11¼	11⅜	
58 Straight Run Gasoline	14⅝	14¾	14⅝	14⅞	15¼	15¾	16⅜	16¼	17¼	17	17¼	17¼	16⅞	16¾	16¾	16	15⅝	15⅜	15	14⅜	14⅛	14⅜	14⅜	14⅜	14⅜	14	14	13⅞	13¼	13	12¾	12¾	12½	12⅜	12⅜	12¼	
60 Straight Run Gasoline	15½	15⅞	15⅞	15⅞	16¼	16½	17¼	17¼	17¾	18¼	18¼	17¾	18⅜	17¾	17¼	16¾	16⅜	16⅛	15¾	15⅛	16⅜	15	15⅜	15⅜	15	15	14¾	14¾	14¼	13¼	13¾	13¾	13⅜	13⅜	12⅞	13¼	
64 Straight Run Gasoline	18¾	19⅜	19	19	19	18⅝	18¾	19¾	19¾	20½	20¼	19¾	19¼	19⅜	19¼	18⅝	18¼	18½	17⅜	17¼	17¾	17	17⅛	17⅜	17⅜	17	16½	16¾	16¼	16	16	15¾	15¾	15¼	15⅜	14⅞	14⅞	
68 Straight Run Gasoline	23¼	23½	23½	23½	24	24	24	24	24	23½	23	22⅜	22¼	22¼	22½	22¼	21¾	22¼	21¾	21¼	21¼	21¼	20¾	20¾	20¾	20½	20¼	20¼	20¼	19⅜	18¾	18½	18½	18½	18¼	17¾	17½	
68-70 Blend 440 End Point	15⅜	15⅜	15¼	15¼	15½	15⅞	15⅞	16⅜	16⅝	16¾	17	16¾	16⅜	16	16½	15½	15¼	15⅝	14¾	14¼	14⅛	13⅞	14½	13¾	13¾	13¾	13¼	13¾	12¼	11¾	11⅜	10½	10½	10⅞	11¾	11¼	10¾	
45 Water White Kerosene	7⅜	7⅞	7⅝	7½	7⅝	7½	7½	7⅞	7⅝	7⅝	7⅝	7⅜	7⅜	7⅜	7⅛	6⅞	6⅞	6⅞	6⅜	6⅜	6¼	6⅜	6⅜	6⅜	6⅜	6⅜	6⅛	6	5⅞	5⅝	5¼	5¾	5⅞	5⅝	5¼	5⅞	6	
36-40 Fuel Oil	5⅞	6⅜	6⅛	6⅜	6⅜	6⅝	6¾	6¾	6¾	6¾	6¾	6⅜	6½	6⅛	6	5⅞	5⅝	5⅝	5⅜	5⅛	5	5⅛	5⅜	5⅜	5⅜	5⅜	5¼	5⅜	5	5	4⅞	5	5	5	4¾	5⅛	5¼	
200 Vis. No. 3 Assoc. Filt	23½	24½	25	25½	26⅞	27	29½	31½	32	33	32¾	33	33¼	33¼	33	32¾	33	33	33	32⅞	33	33	32¾	32¾	32½	32⅛	31	31½	31	31	29¾	29½	29¼	29¾	28	27½	28½	
600 Steam Refined	9¾	9⅞	10¼	10¼	10¾	11½	12¾	14	15½	16	16	15½	15¼	15⅛	14½	14½	14¼	13¾	13¼	13¼	13¼	12⅜	12¼	11⅞	11¾	11¼	11¼	11¾	11	10¾	10¼	10¼	10¼	10	9⅝	9¾	9⅞	
600 Flash	17¼	17½	17¾	18	18½	18⅞	21	21½	21¾	21¾	21¾	21¾	21¼	21	19¾	19¾	19¼	18¾	19	18⅞	18	18½	17¾	17¾	17¾	17½	17¼	17¼	17	16¾	15¾	15½	16	16	14½	16	16	
600 Oil City E	14⅝	14¾	15	15	15¾	16½	17¾	19½	20½	20½	20½	20⅛	19¾	19¼	19	18¾	18	16⅞	17½	16½	16½	16½	15¾	15¾	15½	15¼	15¼	15¾	15¼	14½	14	13¾	14	13¾	13¾	13½	13¾	
Cold Test Bright Filt. Stock	34¼	35½	35½	36	37½	37¼	38½	38	38	38½	39½	39½	39½	39	39	38¼	38¼	38	37	36¼	37	38	37	36	37	36	35½	36	35½	34½	35	34½	34½	35	33	33	34½	
122-124 W. C. Scale Wax N. Y. lb	2⅝	2¾	2½	2⅝	2⅝	2⅝	2¾	2¾	2⅞	2¾	2⅞	2⅞	2⅞	3	2⅞	3	2⅞	3	2⅞	2¾	2⅞	2¾	2⅞	2¾	2⅞	2¾	2⅞	2¾	2⅞	3	2¾	2⅞	3	2⅞	3	3	
Pennsylvania Crude	.08	.08	.08	.08⅛	.08⅜	.08⅛	.09⅛	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09	.09	.09	.08⅜	.08⅓	.07¾	.07¾	.07¾	.07¾	.07¾	.07⅞	.07⅞	.07⅞	.07⅝	.06⅝	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	

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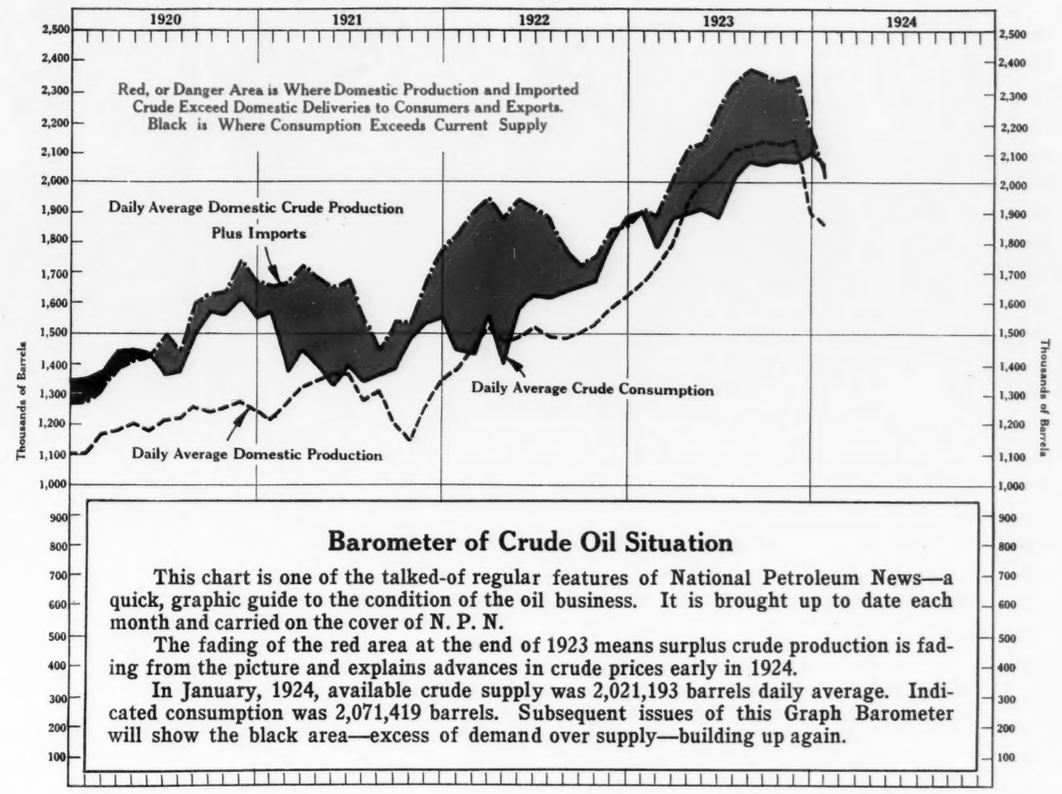
1920
1921
1922
1923
1924
Red, or Danger Area is Where Domestic Production and Imported Crude Exceed Domestic Deliveries to Consumers and Exports.
Black is Where Consumption Exceeds Current Supply
Daily Average Domestic Crude Production
Plus Imports
Daily Average Crude Consumption
Daily Average Domestic Production
Thousands of Barrels

Barometer of Crude Oil Situation

This chart is one of the talked-of regular features of National Petroleum News—a quick, graphic guide to the condition of the oil business. It is brought up to date each month and carried on the cover of N. P. N.

The fading of the red area at the end of 1923 means surplus crude production is fading from the picture and explains advances in crude prices early in 1924.

In January, 1924, available crude supply was 2,021,193 barrels daily average. Indicated consumption was 2,071,419 barrels. Subsequent issues of this Graph Barometer will show the black area—excess of demand over supply—building up again.

Tank Wagon Prices of Gasoline and Kerosene Monthly 1923

		Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15
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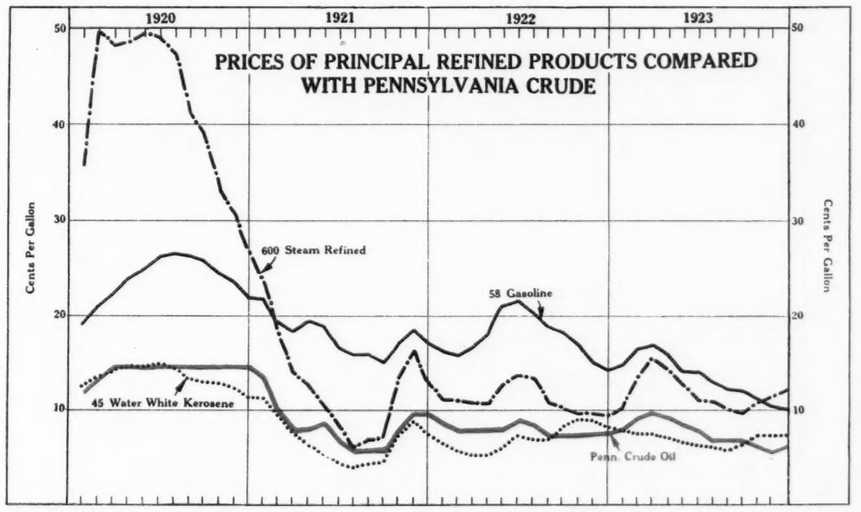
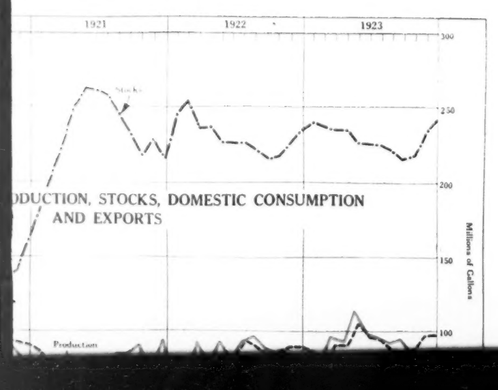
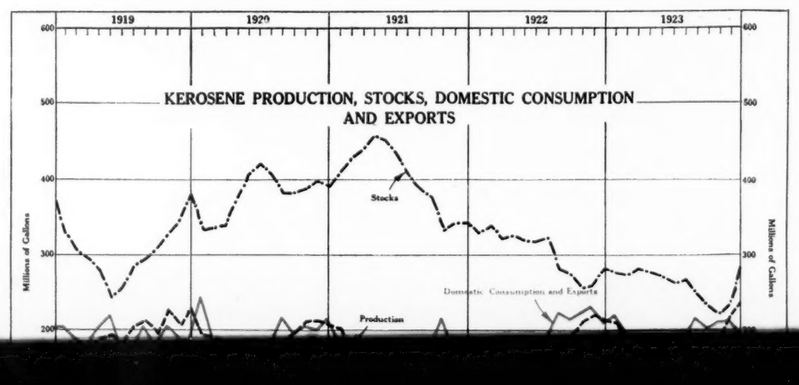
	Kerosene	15	15	15	15	14	14	14	14	14	14	15	15
Washington (S. O. N. J.)	Gasoline	21	22	23	23	21	21	21	20	20	18	15	15
	Kerosene	13.5	13	13	13	12.5	12.5	12.5	12.5	12.5	12.5	13.5	13.5
Philadelphia (Atlantic Ref.)	Gasoline	21	22	23	23	21	21	21	19	19	18	16	14
	Kerosene	14	14	14	14	14	14	14	14	14	14	14	14
Cleveland (S. O. Ohio)	Gasoline	19	20	21	21	21	21	20	20	18.5	17	16	16
	Kerosene	13	13	13	13	13	13	13	13	13	13	13	13
Lexington (S. O. Ky.)	Gasoline	20	21	23	23	23	23	21	20	18	17	15	15
	Kerosene	14	14	14	14	14	14	14	14	14	14	14	14
New Orleans (S. O. La.)	Gasoline	16	18	20.5	19.5	17.5	16.5	16.5	13.5	13.5	13.5	12.5	12.5
	Kerosene	13	12	12	12	11	11	11	11	11	11	12	12
Tulsa (Magnolia)	Gasoline	16	18	20	20	15	15	16	16	12	11	11	9
	Kerosene	10	11	11	11	11	11	9	9	9	9	9	9
Chicago (S. O. Ind.)	Gasoline	18	19	20	20	20	20	20	13.4	13.4	13.4	12	12
	Kerosene	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	10	10	10
Omaha (S. O. Neb.)	Gasoline	18.25	19.5	20.5	20.5	20.5	20.5	20.5	14.25	14.25	14.25	12.25	12.25
	Kerosene	12.25	12.25	11.75	11.75	11.75	11.75	11.75	11.75	11.75	10.5	10.5	10.5
Denver (Continental)	Gasoline	18	20	21	21	19	19	19	17	17	15	13	13
	Kerosene	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	12.5	12.5	12.5
Los Angeles (S. O. Cal.)	Gasoline	17	17	17	16	16	16	16	14	10	12	12	12
	Kerosene	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5

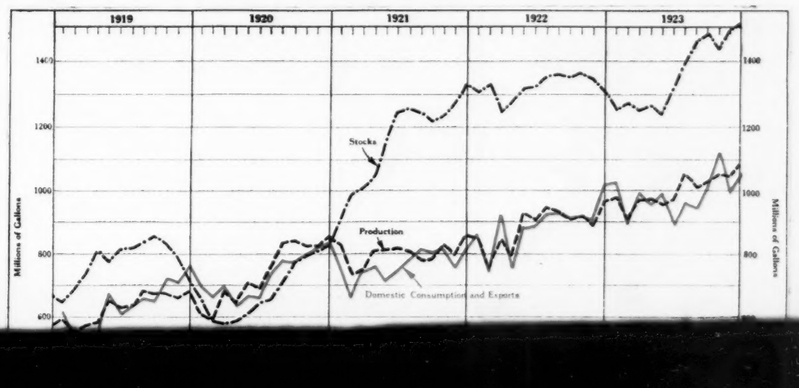


k of 1923 for Principal Products at Pennsylvania Refineries, Compared with Price of Pennsylvania Crude—Cents per Gallon

APRIL			MAY				JUNE				JULY					AUGUST				SEPTEMBER				OCTOBER					NOVEMBER				DECEMBER					MONTHS
16	23	30	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	Weeks
15½	14⅞	14⅞	14½	13¾	13⅝	13⅞	14⅛	13¾	13⅝	13¾	13¼	13¼	12⅝	12¼	11¾	11¾	11⅜	11⅝	11¼	11¼	11⅜	11⅝	11⅝	11¼	11⅜	10⅝	10½	10½	10⅜	10⅜	9⅞	9⅞	9⅝	9⅜	9¾	9½	10¼	54 Naptha
16	15⅝	15⅜	15	14⅜	14⅛	14⅜	14⅜	14⅜	14⅛	14	14	13⅞	13¾	13	12¾	12¾	12½	12¾	12⅛	12⅛	12¼	12¼	12⅛	11⅞	11¾	11½	11½	10⅞	10⅝	10¾	10¼	10⅛	9⅞	9⅞	9⅞	10⅛	10¼	58 Straight Run Gasoline
16¼	16⅛	16⅛	15¾	15⅛	16⅛	15	15⅜	15⅜	15	15	14¾	14¾	14¼	13¼	13¾	13¾	13½	13¾	13⅜	12⅞	13¼	13¼	12¾	12⅞	12¾	12¾	12¼	11¾	11⅝	11¾	11	10¾	10¾	10⅝	10¾	11	11¼	60 Straight Run Gasoline
18⅝	18¼	18½	17⅜	17¼	17¾	17	17⅛	17⅜	17	17	16½	16¾	16¼	16	16	15¾	15¼	15⅜	15⅜	14⅞	14⅞	15	14⅝	14¾	14¾	14¾	14⅜	13⅞	14¼	14¼	13¾	13¼	13⅜	13⅛	12¾	13	13¾	64 Straight Run Gasoline
22¼	21¾	22¼	21¼	21¼	21¼	21¼	20¾	20¾	20¼	20¼	20¼	20¼	20¼	19⅜	18¾	18½	18½	18½	18½	17¾	17½	17¾	18	17½	17¾	18¼	17¾	18	17¼	17¾	17¼	16¾	17	16¼	16¼	16½	68 Straight Run Gasoline
15½	15¼	15⅝	14¾	14¼	14⅛	13⅞	13¾	13¾	13¾	13¾	13¾	13¾	12¼	11¾	11⅜	11⅜	10½	10½	10⅞	11¼	10¾	11⅜	11⅜	10⅝	11⅜	11⅛	11	11	11	11	11	10½	10½	10½	10⅜	10⅜	11	68-70 Blend 440 End Point
6⅞	6⅞	6⅞	6⅝	6⅜	6¼	6⅜	6⅜	6⅜	6⅛	6⅜	6⅜	6	5⅞	5⅝	5⅝	5¾	5⅞	5¾	5¼	5⅞	6	6⅜	6¾	6⅞	7¼	7⅜	7½	7⅜	7⅜	7⅜	7⅜	7⅜	7⅜	7⅜	7⅜	7⅜	7⅜	45 Water White Kerosene
5⅞	5⅝	5⅝	5⅜	5⅜	5	5⅜	5⅜	5⅜	5	5⅛	5¼	5⅛	5	5	4⅞	5	5	5	4¾	5⅛	5¼	5⅜	5⅝	5¾	5¾	6	5⅞	6	5⅞	5⅞	6⅜	5½	5⅜	5	5	5⅛	5⅜	36-40 Fuel Oil
32¾	33	33	33	32⅞	33	33	32¾	32¾	32½	32⅜	31	31½	31	31	29¾	29½	29¼	29¾	28	27½	28½	27½	26¾	26¾	26½	26¾	26	25¾	25¾	25¾	25½	26	25¾	25¾	26	27¾	28¼	200 Vis. No. 3 Assoc. Filt.
14½	14¼	13¾	13¼	13¼	13¼	12⅜	12¼	11⅞	11¼	11¼	11¼	11¼	11	10¾	10¼	10¼	10¼	10	9⅝	9¾	9⅞	9¾	10¼	10¾	11	11⅜	11⅜	11¼	11¼	11¼	11¼	11¾	11¾	11¾	12	14	15¼	600 Steam Refined
19¼	19¼	18¾	19	18⅞	18	18½	17¾	17¾	17¾	17½	17¼	17¼	17	16¾	15¾	15½	16	16	14½	16	16	16	15¾	16	16¼	16¾	16¾	16½	17	16¾	16¾	17	18	18	18	19	20¼	600 Flash
18¾	18	16⅞	17½	16½	16½	16½	15¾	15¾	15½	15¼	15¼	15¾	15¼	14½	14	13¾	14	13¾	13¼	13½	13¾	13½	13⅞	14	14	14	14	14	14¼	14¼	14¼	15¼	15⅜	15¼	15¾	17¼	18¼	600 Oil City E
38¼	38¼	38	37	36¼	37	38	37	36	37	36	35½	36	35½	34½	35	34½	34½	35	33	33	34½	33½	33½	33½	33¼	33½	33	33	33	33	31½	33	33	32¼	32½	34	34¼	Cold Test Bright Filt. Stock
3	2⅞	3	2⅞	2¾	2⅞	2¾	2⅞	2¾	2⅞	2¾	2⅞	2¾	2⅞	3	2¾	2⅞	3	2⅞	2¾	3	3	3	3	3	3	3⅛	3	3⅛	3	3	3⅛	3⅛	3¼	3⅜	3½	3½	3⅝	122-124 W. C. Scale Wax N. Y. lb.
.09	.09	.08⅔	.08⅓	.07¾	.07¾	.07¾	.07¾	.07¾	.07⅛	.07⅛	.07⅛	.06⅝	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06⅓	.06	.06	.06	.06	.06	.06	.06	.05⅝	.05⅔	.05⅔	.05⅞	.05⅞	.06⅓	.06⅝	.07⅛	Pennsylvania Crude





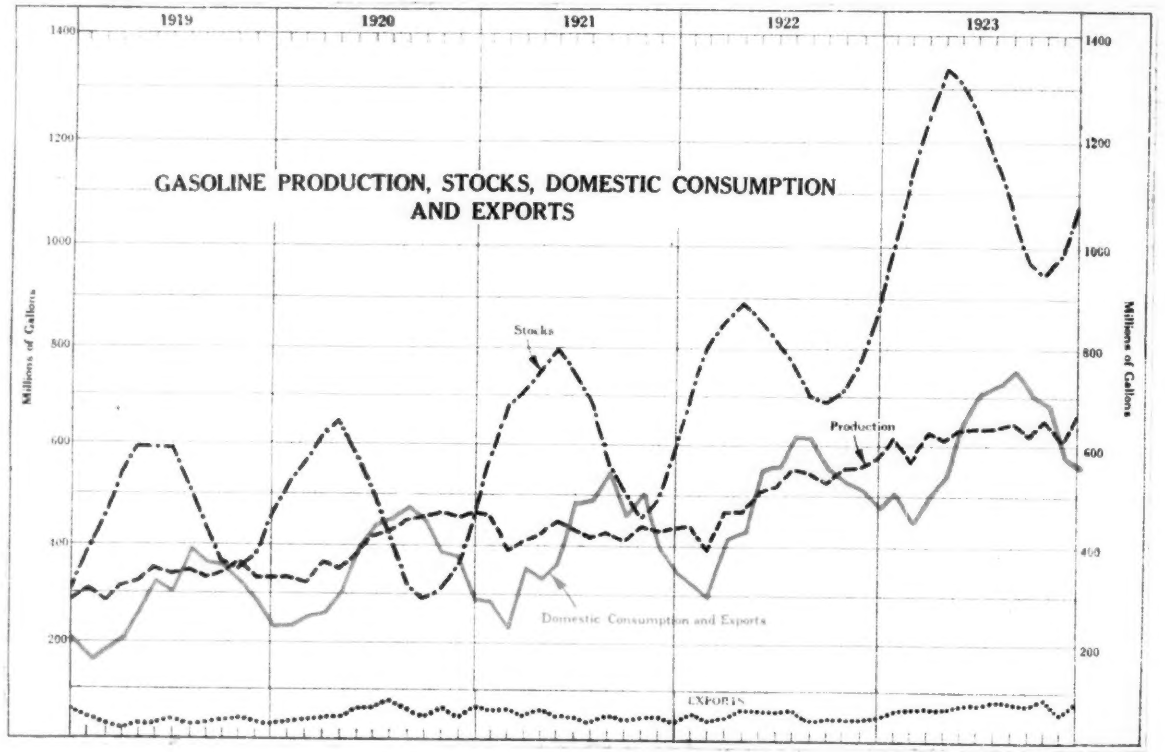


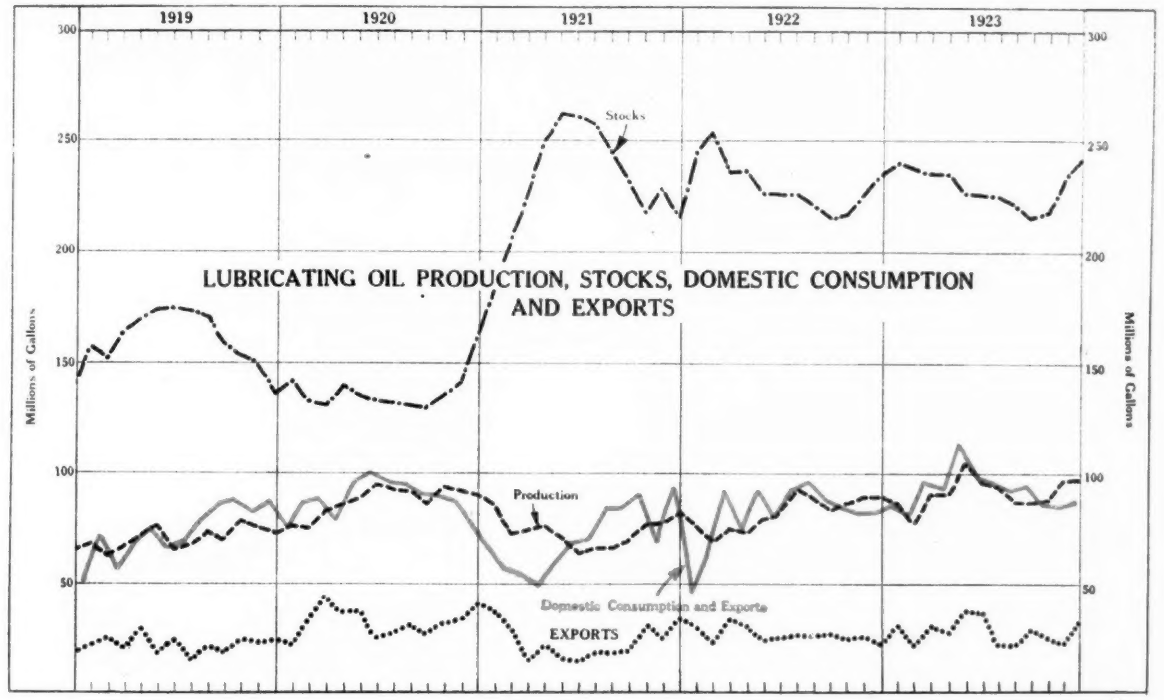
Los Angeles	Gasoline	17	17	17	16	16	16	16	14	16	12	12	12
(S. O. Cal.)	Kerosene	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5

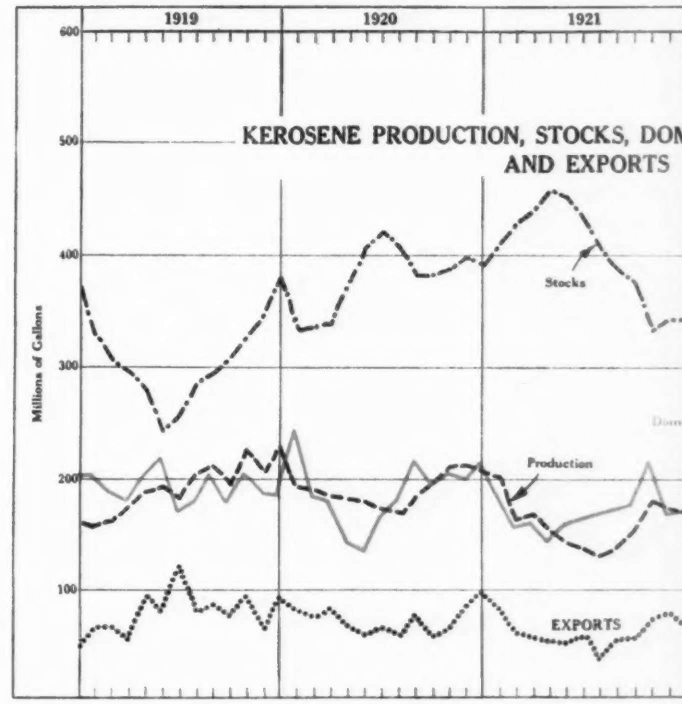
Ruling Refinery Prices Prevailing Each Week of 1923 for Principal Products at Pennsylvania Refineries, Compared with P

MONTHS	JANUARY					FEBRUARY				MARCH				APRIL				
Weeks	2	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	23	30
54 Naptha	13⅞	14	14	14¼	14¾	14⅞	15¾	15½	15¾	15¾	15¾	15⅝	15¾	15¾	15¼	15½	14⅞	14⅞
58 Straight Run Gasoline	14⅝	14¾	14⅝	14⅞	15¼	15¾	16⅜	16¼	17¼	17	17¼	17¼	16⅞	16¾	16¾	16	15⅝	15⅜
60 Straight Run Gasoline	15½	15⅞	15⅞	15⅞	16¼	16½	17¼	17¼	17¾	18¼	18¼	17¾	18⅛	17¾	17¼	16¾	16⅜	16⅛
64 Straight Run Gasoline	18¾	19⅛	19	19	19	18⅝	18¾	19¾	19¾	20½	20¼	19¾	19¼	19⅜	19¼	18⅝	18¼	18½
68 Straight Run Gasoline	23¼	23½	23½	23½	24	24	24	24	24	23½	23	22⅜	22¼	22¼	22½	22¼	21¾	22¼
68-70 Blend 440 End Point	15⅛	15⅛	15¼	15¼	15½	15⅞	15⅞	16⅜	16⅝	16¾	17	16¾	16⅜	16	16½	15½	15¼	15⅝
45 Water White Kerosene	7⅝	7⅞	7⅝	7½	7⅝	7½	7½	7⅞	7⅝	7⅝	7⅝	7⅜	7⅜	7⅛	7⅛	6⅞	6⅞	6⅞
36-40 Fuel Oil	5⅞	6⅜	6⅛	6⅜	6⅜	6⅝	6¾	6¾	6¾	6¾	6¾	6⅜	6½	6⅛	6	5⅞	5⅝	5⅝
200 Vis. No. 3 Assoc. Filt	23½	24½	25	25½	26⅞	27	29½	31½	32	33	32¾	33	33¼	33¼	33	32¾	33	33
600 Steam Refined	9¾	9⅞	10¼	10¼	10¾	11½	12¾	14	15½	16	16	15½	15¼	15⅛	14½	14½	14¼	13¾
600 Flash	17¼	17½	17¾	18	18½	18⅞	21	21½	21¾	21¾	21¾	21¾	21¼	21	19¾	19¾	19¼	18¾
600 Oil City E	14⅝	14¾	15	15	15¾	16½	17¾	19½	20½	20½	20½	20⅛	19¾	19¼	19	18¾	18	16⅞
Cold Test Bright Filt. Stock	34¼	35½	35½	36	37½	37½	38½	38	38	38½	39½	39½	39½	39	39	38¼	38¼	38
122-124 W. C. Scale Wax N. Y. lb	2⅝	2¾	2½	2⅝	2⅝	2⅝	2¾	2¾	2⅞	2¾	2⅞	2⅞	2⅞	3	2⅞	3	2⅞	3
Pennsylvania Crude	.08	.08	.08	.08⅕	.08⅗	.08⅘	.09⅕	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09	.09	.09	.08⅗

MONTHS	MAY				JUNE				JULY					AUGUST				SEPTEMBER		
Weeks	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17
54 Naptha	14½	13¾	13⅝	13⅞	14⅛	13¾	13⅝	13¾	13¼	13¼	12⅝	12¼	11¾	11¾	11⅜	11⅝	11¼	11¼	11⅛	11⅝
58 Straight Run Gasoline	15	14⅜	14⅛	14⅜	14⅜	14⅜	14⅛	14	14	13⅞	13¼	13	12¾	12¾	12½	12⅛	12⅜	12⅛	12¼	12½
60 Straight Run Gasoline	15¾	15⅛	16⅛	15	15⅜	15⅛	15	15	14¾	14¾	14¼	13¼	13¾	13¾	13⅝	13	13⅞	12⅞	13¼	13½
64 Straight Run Gasoline	17⅜	17¼	17¾	17	17⅛	17⅛	17⅛	17	16½	16¾	16¼	16	16	15¾	15¾	15¼	15⅜	14⅞	14⅞	15
68 Straight Run Gasoline	21¼	21¼	21¼	21¼	20¾	20¾	20¼	20½	20¼	20¼	20¼	19⅜	18¾	18½	18½	18½	18½	17¾	17½	18
68-70 Blend 440 End Point	14¾	14¼	14⅛	13⅞	14½	13¾	13¾	13¾	13¼	13¾	12¼	11¾	11⅛	10½	10½	10⅞	11¾	11¼	10¾	11¾
45 Water White Kerosene	6⅝	6⅜	6¼	6⅜	6⅛	6⅛	6⅛	6⅛	6⅛	6	5⅞	5⅞	5⅝	5¾	5⅞	5⅞	5¼	5⅞	6	6¾
36-40 Fuel Oil	5⅜	5⅛	5	5⅛	5⅛	5⅛	5⅜	5⅛	5¼	5⅛	5	5	4⅞	5	5	5	4¾	5⅛	5¼	5⅜
200 Vis. No. 3 Assoc. Filt	33	32⅞	33	33	32¾	32¾	32½	32⅛	31	31½	31	31	29¾	29½	29¼	29¾	28	27½	28½	27½
600 Steam Refined	13¼	13¼	13¼	12⅜	12¼	11⅞	11¾	11¼	11¼	11¼	11	10¾	10¼	10¼	10¼	10	9⅝	9¾	9⅞	9¾
600 Flash	19	18⅞	18	18½	17¾	17¾	17¾	17½	17¼	17¼	17	16¾	15¾	15½	16	16	14½	16	16	16
600 Oil City E	17½	16½	16½	16½	15¾	15¾	15½	15¼	15¼	15¾	15¼	14½	14	13¾	14	13¾	13¼	13½	13¾	13½
Cold Test Bright Filt. Stock	37	36¼	37	38	37	36	37	36	35½	36	35½	34½	35	34½	34½	35	33	33	34½	33½
122-124 W. C. Scale Wax N. Y. lb	2⅞	2¾	2⅞	2¾	2⅞	2¾	2⅞	2¾	2⅞	2¾	2⅞	3	2¾	2⅞	3	2⅞	2¾	3	3	3
Pennsylvania Crude	.08⅓	.07¾	.07¾	.07¾	.07¾	.07¾	.07⅛	.07⅛	.07⅛	.06⅝	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½







(Bureau of Mines Figures are Basis of Above Compilation on Refinery Operations)

Ruling Refinery Prices Prevailing Each Week of 1923 for Principal Products at Mid-Continent Refineries, Compared with

MONTHS	JANUARY					FEBRUARY				MARCH				APRIL				
Weeks	2	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	23	30
50–52, 450 End Point	10½	10⅜	10½	11⅜	11¾	12⅜	12¾	13⅛	13⅝	13⅞	13⅞	13⅛	12⅞	12¾	12⅞	12¾	12½	11¼
58–60, New Navy Gasoline	11½	11½	12	12⅜	13	13⅜	13¾	13⅞	14¾	14¾	14⅜	14	13⅜	13¼	13¼	13¼	12½	11¾
64–66, 375 End Point	15¾	15½	15¾	15½	15¾	15⅞	16	16¼	16½	16⅝	16⅝	16¼	16⅛	16	15¾	15¾	15	14⅜
Grade A, Natural	12¼	12½	13⅞	13¼	13⅜	13¾	14¼	14¼	15⅛	15	14½	13⅞	12¾	12½	12	11¼	10⅝	10⅛
Grade C, Natural	11	11⅛	11⅝	12	12	12¾	13⅛	13½	14⅛	13¾	13½	12⅞	11½	11⅝	10¾	9¾	9⅛	8
58–62, 450 End Point	10⅜	10⅝	11	11¼	11¾	12⅜	12¾	13	14⅛	13⅜	13¼	12¾	12⅝	12½	12½	12	12	11⅛
41–43, Water White Kerosene	4⅝	4⅝	4⅝	4⅜	4½	4⅜	4⅜	4¼	4¼	4⅜	4⅜	4¼	4¼	4¼	4⅛	4¼	4⅛	4
200 Vis. at 100°F No. 3 Color	12¼	12¼	12¼	12¼	12¼	13	13	13	13	13	13	13	13	13	13	13	13	13
Bright Filtered Stock	27	27	27	27	27	28	28	28	28	28	28	28	28	28	28	28	28	28
32–36 Gas Oil	2¾	2⅞	3⅛	3⅛	3⅜	3⅜	3⅜	3⅜	3¼	3⅜	3¼	3¼	3¼	3¼	3⅛	3¼	3⅛	3⅛
24–26 Fuel Oil (Barrel)	.92½	.92½	.97½	1.02½	1.02½	1.05	1.02½	1.05	1.07½	1.07½	1.07½	1.07½	1.07½	1.08¾	1.12½	1.20	1.22½	1.12½
Mid-Continent Crude	.03⅓	.03⅖	.03¾	.04	.04⅕	.04⅓	.04⅗	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04½	.04⅓

MONTHS	MAY				JUNE				JULY					AUGUST				SEPTEMBER		
Weeks	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17
50–52, 450 End Point	10⅞	10¾	11	12½	12¾	12⅜	11½	10½	10	9¾	9½	9⅜	9¼	8⅝	8⅜	7⅜	7	6¾	6½	6¼
58–60, New Navy Gasoline	11¼	10¾	11¾	13	13⅜	12½	11¼	10⅜	10⅛	9¾	9⅞	9½	9¼	8¾	8½	7¾	7¼	6⅞	6⅝	6⅝
64–66, 375 End Point	13¾	13⅜	15	15⅜	15⅜	14⅝	13½	13	12¾	12⅝	12⅜	12	11¾	11⅛	10⅞	10½	10¼	9⅞	9⅝	9½
Grade A, Natural	9⅛	8⅜	8¼	11	11	10½	9	9¾	8¼	8	7⅝	7	6¾	6½	6¾	6¾	7¼	7¼	7⅜	7⅜
Grade C, Natural	7⅛	6¾	6¾	10	10	8¾	8	8½	7¼	6¾	6⅝	6	5¾	5½	5⅝	5¾	6½	6⅞	7⅛	7⅛
58–62, 450 End Point	10¾	10⅛	11¼	11⅞	11⅞	11¾	10¾	9¾	9¼	8¾	8¾	8½	8⅜	8⅛	8⅛	7½	7¼	6⅞	6½	6¼
41–43, Water White Kerosene	4	4	4	4⅛	4⅛	4⅛	4	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞
200 Vis. at 100°F No. 3 Color	13¾	13¾	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Bright Filtered Stock	29	29	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27½	27½	27½
32–36 Gas Oil	3⅛	2⅞	2⅞	2¾	2¾	2¾	2⅝	2⅝	2⅜	2⅝	2½	2⅝	2½	2⅝	2½	2⅝	2½	2½	2½	2½
24–26 Fuel Oil (Barrel)	1.10	1.05	1.05	1.07½	1.07½	1.02½	.97½	.97½	.92½	.92½	.92½	.92½	.92½	.93¾	1.00	.97½	.94¾	.92½	.87½	.85
Mid-Continent Crude	.04	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03⅘	.03½

Supplement to

National Petroleum News

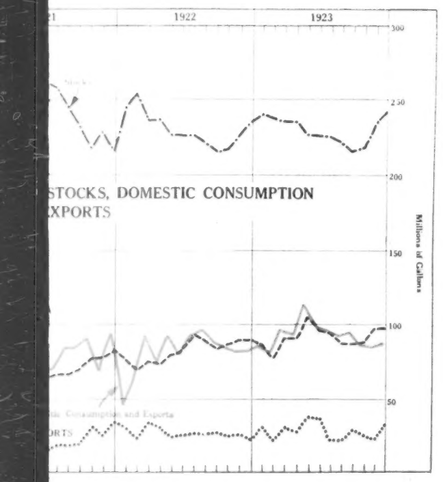
March 26, 1924

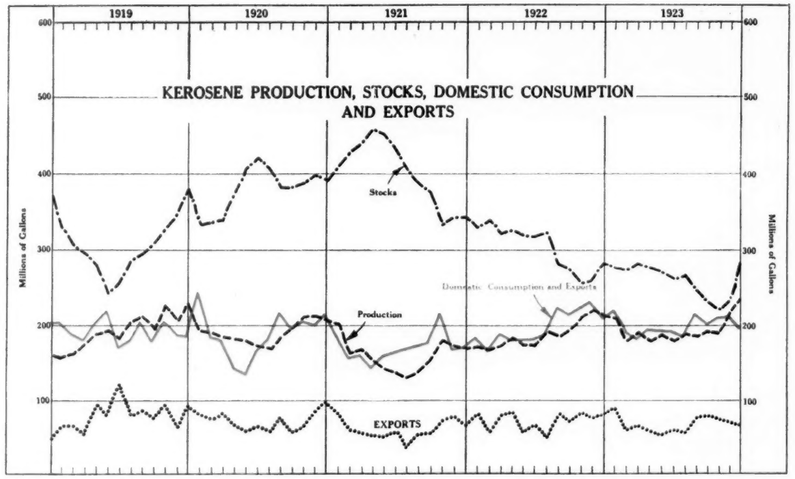
VOL. XVI No. 13

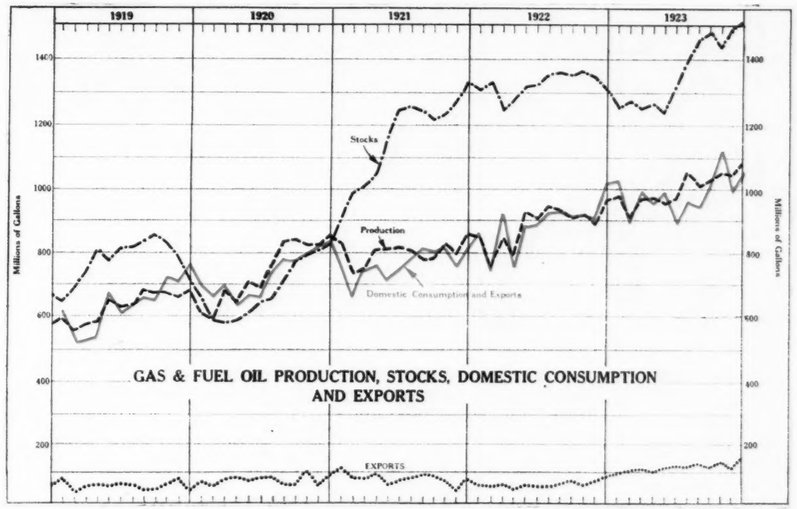
Los Angeles	Gasoline	17	17	17	16	16	16	16	14	16	12	12	12																				
(S. O. Cal.)	Kerosene	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5																				

1923 for Principal Products at Pennsylvania Refineries, Compared with Price of Pennsylvania Crude—Cents per Gallon

		MAY				JUNE				JULY					AUGUST				SEPTEMBER				OCTOBER					NOVEMBER				DECEMBER					MONTHS
23	30	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	Weeks
1⅞	1 47/8	1 41/2	1 33/4	1 35/8	1 37/8	1 43/8	1 33/4	1 35/8	1 33/4	1 31/4	1 31/4	1 25/8	1 21/4	1 13/4	1 13/4	1 13/8	1 15/8	1 11/4	1 11/4	1 11/8	1 15/8	1 15/8	1 11/4	1 11/8	1 05/8	1 03/4	1 03/4	1 03/8	1 03/8	1 01/8	0 97/8	0 97/8	0 95/8	0 93/8	0 93/4	0 91/2	0 101/4	54 Naptha
2 5/8	2 5/8	2 15/8	2	2 1/8	2	2 3/8	2 1/8	2	2	1 7/8	1 7/8	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 7/8	1 7/8	1 7/8	1 7/8	1 7/8	58 Straight Run Gasoline
2 3/8	2 3/8	2 1/8	2 1/8	2 1/8	2	2 1/8	2 1/8	2 1/8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	60 Straight Run Gasoline
2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	64 Straight Run Gasoline
2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	68 Straight Run Gasoline
1 5/8	1 5/8	1 4/3	1 4/4	1 4/8	1 3/8	1 4/2	1 3/4	1 4/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	68-70 Blend 440 End Point
6 7/8	6 7/8	6 5/8	6 3/8	6 1/4	6 3/8	6 3/8	6 1/8	6 1/8	6 3/8	6 1/8	6	5 7/8	5 7/8	5 5/8	5 3/4	5 7/8	5 7/8	5 1/4	5 7/8	6	6 3/8	6 3/4	6 7/8	7 1/4	7 3/8	7 1/2	7 3/8	7 3/8	7 3/8	7 3/8	7 3/8	7 1/8	7 3/8	7 1/8	7 3/8	7 3/8	45 Water White Kerosene
5 7/8	5 7/8	5 3/8	5 3/8	5	5 1/8	5 1/8	5 1/8	5 3/8	5 1/8	5 1/4	5 1/8	5	5	4 7/8	5	5	5	4 3/4	5 3/8	5 1/4	5 3/8	5 5/8	5 3/4	5 3/4	6	5 7/8	6	5 7/8	5 7/8	6 3/8	5 1/2	5 3/8	5	5	5 1/8	5 3/8	36-40 Fuel Oil
33	33	32 7/8	33	33	32 3/4	32 3/4	32 1/4	32 1/8	31	31 1/2	31	31	29 3/4	29 1/2	29 1/4	29	28	27 1/2	28 1/2	27 1/2	26 3/4	26 3/4	26 1/2	26 3/4	26	25 3/4	25 3/4	25 3/4	25 1/2	26	25 3/4	25 3/4	26	27 3/4	28 1/4	200 Vis. No. 3 Assoc. Filt.
13 3/4	13 3/4	13 1/4	13 1/4	13 1/4	12 3/8	12 1/4	11 7/8	11 3/4	11 1/4	11 1/4	11 1/4	11	10 3/4	10 1/4	10 3/4	10 1/4	10	9 3/4	9 7/8	9 3/4	10 1/4	10 3/4	10 3/4	11	11 3/8	11 3/8	11 1/4	11 1/4	11 1/4	11 1/4	11 3/4	11 3/4	11 3/4	12	14	15 1/4	600 Steam Refined
18 3/4	18 3/4	19	18 7/8	18	18 1/2	17 3/4	17 3/4	17 3/4	17 1/2	17 1/4	17 1/4	17	16 3/4	15 3/4	15 1/2	16	16	14 1/2	16	16	16	15 3/4	17	16 1/4	16 3/4	16 3/4	16 3/4	16 1/2	17	16 3/4	16 3/4	17	18	18	19	20 1/4	600 Flash
16 7/8	16 7/8	17 1/2	16 1/2	16 1/2	16 1/2	15 3/4	15 3/4	15 1/2	15 1/4	15 1/4	15 3/4	15 1/4	14 1/2	14	13 3/4	14	13 3/4	13 1/4	13 1/2	13 3/4	13 1/2	13 7/8	14	14	14	14	14	14 1/4	14 1/4	14 1/4	15 1/4	15 1/8	15 1/4	15 3/4	17 1/4	18 1/4	600 Oil City E
38	38	37	36 1/4	37	38	37	36	37	36	35 1/2	36	35 1/2	34 1/2	35	34 1/2	34 1/2	35	33	33	34 1/2	33 1/2	33 1/2	33 1/2	33 1/2	33 1/2	33	33	33	33	31 1/2	33	33	32 3/4	32 1/2	34	34 1/4	Cold Test Bright Filt. Stock
3	3	2 7/8	2 3/4	2 7/8	2 3/4	2 7/8	2 3/4	2 7/8	2 3/4	2 7/8	2 3/4	2 7/8	3	2 3/4	2 7/8	3	2 7/8	2 3/4	3	3	3	3	3	3	3	3 1/8	3	3 1/8	3	3 1/8	3 1/4	3 1/4	3 3/8	3 1/2	3 1/2	3 3/8	122-124 W. C. Scale Wax N. Y. lb.
0	0 8 1/2	0 8 1/2	0 7 3/4	0 7 3/4	0 7 3/4	0 7 3/4	0 7 3/4	0 7 1/8	0 7 1/8	0 7 1/8	0 6 5/8	0 6 1/2	0 6 1/2	0 6 1/2	0 6 1/2	0 6 1/2	0 6 1/2	0 6 1/2	0 6 1/2	0 6 1/2	0 6 1/8	0 6	0 6	0 6	0 6	0 6	0 6	0 6	0 5 5/8	0 5 1/8	0 5 1/8	0 5 1/8	0 5 1/8	0 5 7/8	0 6 1/8	0 6 5/8	0 7 1/8	Pennsylvania Crude







(Bureau of Mines Figures are Basis of Above Compilation on Refinery Operations)

1923 for Principal Products at Mid-Continent Refineries, Compared with Price of Mid-Continent Crude—Cents per Gallon

		MAY				JUNE				JULY					AUGUST				SEPTEMBER				OCTOBER					NOVEMBER				DECEMBER					MONTHS
23	30	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	Weeks
2 1/2	1 1/4	10 7/8	10 3/4	11	12 1/2	12 3/4	12 3/8	11 1/2	10 1/2	10	9 3/4	9 1/2	9 3/8	9 1/4	8 5/8	8 3/8	7 3/8	7	6 3/4	6 1/2	6 1/4	6 1/4	6 1/4	6 3/8	6 3/8	6 1/4	6 1/4	6 1/8	5 7/8	5 5/8	5 7/8	6 1/8	6 1/8	6 5/8	7 1/8	8 1/2	50–52, 450 End Point
2 1/2	1 1/4	11 1/4	10 3/4	11 3/4	13	13 3/8	12 1/2	11 1/4	10 3/8	10 1/8	9 3/4	9 7/8	9 1/2	9 1/4	8 3/4	8 1/2	7 3/4	7 1/4	6 7/8	6 5/8	6 5/8	6 1/2	6 5/8	6 1/2	6 3/4	6 5/8	6 5/8	6 1/2	6 3/8	6 1/8	6 3/8	6 5/8	6 7/8	7 3/8	7 5/8	8 7/8	58–60, New Navy Gasoline
5	1 4 3/8	13 3/4	13 3/8	15	15 3/8	15 3/8	14 5/8	13 1/2	13	12 3/4	12 5/8	12 3/8	12	11 3/4	11 3/8	10 7/8	10 1/2	10 1/4	9 3/8	9 5/8	9 1/4	9 1/4	9 3/8	9 3/8	9 5/8	9 1/2	9 1/4	9 1/8	8 3/4	8 1/2	8 5/8	8 5/8	8 7/8	9 3/8	9 1/4	10 3/4	64–66, 375 End Point
9 5/8	10 3/8	9 3/8	8 3/8	8 1/4	11	11	10 3/4	9	9 3/4	8 1/4	8	7 5/8	7	6 3/4	6 1/2	6 3/4	6 3/4	7 1/4	7 1/4	7 3/8	7 3/8	7 5/8	7 3/4	8	8 1/8	8 1/8	7 7/8	7 1/2	6 7/8	6 3/8	5 7/8	5 5/8	5 3/4	5 7/8	6 1/2	7 1/2	Grade A, Natural
9 1/8	8	7 1/8	6 3/4	6 3/4	10	10	8 3/4	8	8 1/2	7 1/4	6 3/4	6 5/8	6	5 3/4	5 1/2	5 5/8	5 3/4	5 1/2	6 1/2	7	7 3/8	7 1/8	7 3/4	7 5/8	7 3/8	7 3/4	7 3/4	7 3/8	6 7/8	6 1/2	5 3/4	5 1/4	5	4 7/8	4 7/8	5 1/8	5 3/4	Grade C, Natural
12	11 1/8	10 3/4	10 1/8	11 1/4	11 7/8	11 7/8	11 3/4	10 3/4	9 3/4	9 1/4	8 3/4	8 3/4	8 1/2	8 3/8	8 1/8	8 1/8	7 1/2	7 1/4	6 7/8	6 1/2	6 1/4	6 5/8	6 5/8	6 3/4	6 3/4	6 3/4	6 3/4	6 3/4	6 3/8	6 1/8	6	5 7/8	6 1/4	6 1/8	6 3/8	6 7/8	8 3/8	58–62, 450 End Point
4 1/8	4	4	4	4	4 1/8	4 1/8	4 1/8	4	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	4	4	4	4	4	4 1/8	4 1/8	4 3/8	4 5/8	4 1/2	4 5/8	4 1/2	4 5/8	4 5/8	41–43, Water White Kerosene
13	13	13 3/4	13 3/4	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13 1/2	13 3/4	13	13 1/4	15 1/4	15 1/4	15 1/4	15 1/4	15 1/4	15	13 1/4	13 1/4	13 1/4	13 1/4	13 1/4	13 1/4	13 1/4	13 1/4	200 Vis. at 100°F. No. 3 Color
28	28	29	29	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27 1/2	27 1/2	27 1/2	29 1/2	29 1/2	29 1/2	29 1/2	29 1/2	29 1/2	29 1/2	28 1/2	28 1/2	28 1/2	28 1/2	28 1/2	28 1/2	28 1/2	28 1/2	Bright Filtered Stock
3 1/8	3 1/8	3 1/8	2 7/8	2 7/8	2 3/4	2 3/4	2 3/4	2 5/8	2 5/8	2 3/8	2 5/8	2 3/4	2 5/8	2 3/4	2 5/8	2 3/4	2 5/8	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/8	2 3/8	2 3/8	2 3/8	2 3/8	2 3/8	2 3/4	2 5/8	32–36, Gas Oil
1 22 1/2	1 12 1/2	1.10	1.05	1.05	1.07 1/2	1.07 1/2	1.02 1/2	.97 1/2	.97 1/2	.92 1/2	.92 1/2	.92 1/2	.92 1/2	.92 1/2	.93 3/4	1.00	.97 1/2	.94 3/4	.92 1/2	.87 1/2	.85	.87 1/2	.85	.82 1/2	.82 1/2	.80	.80	.80	.75	.72 1/2	.70	.72 1/2	.77 1/2	.82 1/2	.87 1/2	.90	24–26, Fuel Oil (Bbl.)
0 4 1/2	0 4 1/4	0 4	0 3 3/4	0 3 3/4	0 3 3/4	0 3 3/4	0 3 3/8	0 3 1/8	0 3 1/8	0 3 1/8	0 3 1/8	0 3 1/8	0 3 1/8	0 3 1/8	0 3 1/8	0 3 1/8	0 3 1/8	0 3 1/8	0 3 3/8	0 3 3/8	0 3 1/3	0 3	0 3	0 3	0 3	0 3	0 3	0 2 3/4	0 2 7/8	0 2 7/8	0 2 7/8	0 2 7/8	0 2 7/8	0 2 7/8	0 2 7/8	0 2 7/8	Mid-Continent Crude

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